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ABSTRACT

Nearly 150 environmental programs at approximately 120 colleges and universities in the United States and nine programs at three Canadian universities are described in this directory. Entries are made alphabetically by state. Each includes the name and address of the individual to be contacted for further information, the program name and degrees available, and a descriptive annotation of the program. (PR)

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KEY NO. 7

EDUCATION ... KEY TO CONSERVATION

The Conservation Education Association

Directory of Degree Programs

RELATED TO

Conservation, Ecology, Environmental Education, Environmental Science, Outdoor Education, & Natural Resources

SE 013 223

COMPILED BY RUSSEL E. BACHERT, JR.

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EDUCATION ... KEY TO CONSERVATION

The Conservation Education Association

Directory of Degree Programs

RELATED TO

Conservation, Ecology, Environmental Education, Environmental Science, Outdoor Education, & Natural Resources

COMPILED BY RUSSEL E. BACHERT, JR.

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INTRODUCTION

This directory has been produced as a reference for persons interested in furthering their education through a degree program related to either conservation, ecology, environmental education, environmental science, outdoor education or natural resources; and for guidance counselors and other individuals responsible for assisting students in identifying a program that meets their needs and interests.

The directory is arranged alphabetically according to state. Each college or university entry includes the name and address of where to write for further information, program(s) available, and a descriptive annotation. The information used in this publication is based upon material available from that particular institution.

Endorsement of this publication has come from the Committee on Professional Preparation of the Council on Outdoor Education and the Outdoor Education Project of the American Association For Health, Physical Education, and Recreation. The author wishes to thank Dr. Morris Wiener, Chairman of the Committee on Professional Preparation of the Council on Outdoor Education and Professor of Outdoor Education at Northern Illinois University and Dr. Julian W. Smith, Director of the Outdoor Education at Michigan State University for their cooperation and assistance with this directory.

Any college or university that has a program which should be included in this directory should send pertinent data to the author. It is anticipated that some of the entries in this first edition of the directory may need to be amended or expanded for the second edition; these should also be sent to the author. Address any correspondence to: Russel E. Bachert, Jr., c/o The Interstate Printers & Publishers, Inc., Danville, Illinois.

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ALABAMA

University of South Alabama

Chairman
Department of Health, Physical Education, and Recreation
University of South Alabama
Mobile, Alabama 36608

Proposed: Degree in Recreation with an Outdoor Education Concentration

University of South Alabama

Mr. F. H. Mitchell
Department of Physics
University of South Alabama
Mobile, Alabama 36608

Proposed: Interdisciplinary degree in Environmental Control Studies

ALASKA

University of Alaska

Dean
College of Biological Sciences and Renewable Resources
University of Alaska
College, Alaska 99706

Biological Sciences and Renewable Resources (M.S., M.A., Ph.D.)

The College of Biological Sciences and Renewable Resources includes the Department of Biological Sciences, Wildlife Management, and Land Resources, and offers the M.S. degree with majors in biology, botany, zoology, wildlife management, fisheries biology, and land resources. A Master of Arts in Teaching (Biology) is offered in conjunction with the Department of Education. Ph.D. programs can be arranged within the College or by collaboration with one of the research institutes of the University.

The flora and fauna of Alaska's taiga and the great variation in environments, combined with easy access to the field and well-equipped laboratories, present unusual opportunities for ecological, physiological, and systematic studies of macro-organisms and micro-organisms. The wildlife and fisheries programs, integrated closely with those of the Alaska Cooperative Wildlife Research Unit, are involved with management problems as well as basic biology. The land resources program deals with research and management problems in forestry, soils, water relations, and land use.

Geographically, the University of Alaska is ideally located for integrated laboratory and field studies of arctic and subarctic phenomena. The laboratories of the College of Biological Sciences and Renewable Resources are well equipped for modern biological research; and spruce forests, aspen-birch forests, alpine tundra, bogs and several types of aquatic habitats are within easy reach of the campus. Faculty and graduate research is carried on, also, throughout most of the vast area of Alaska, extending into southeastern coastal forests, the extensive arctic tundras, and the waters of the surrounding oceans.

In addition to the facilities of the College and those of the Alaska Cooperative Wildlife Research Unit, students can work cooperatively with the staff and facilities of the University's Research Institute of Marine Sciences, the Institute of Arctic Biology, and the on-campus laboratories of the Federal Alaska Water Laboratory, the Institute of Northern Forestry, and the Arctic Health Research Center.

ARIZONA

ARKANSAS

CALIFORNIA

California State College at Bakersfield

John R. Coash, Dean
School of Natural Sciences
California State College at Bakersfield
Bakersfield, California 93306

Interdepartmental program emphasizing environmental relationships to the health of man

California State College – Hayward

Dr. Esther P. Railton
Department of Teacher Education
California State College - Hayward
Hayward, California 94544

Proposed: Elementary Curriculum (M.S.) with an option in Environmental Education

University of California, Davis

Chairman of the Graduate Group in Ecology
Institute of Ecology
University of California
Davis, California 95616

Ecology (M.S., Ph.D.)

The Ecology Group offers interdisciplinary graduate programs leading to the M.S. and Ph.D. degrees in ecology. Applicants should hold a bachelor's or master's degree from an accredited institution. The programs are flexible and based upon a core sequency in ecology and more than 150 supplemental environmentally oriented courses in the biological, physical, resource, and social sciences, and in engineering, medicine, and the humanities. The degrees are research oriented, with emphasis placed on interdisciplinary approaches to current problems related to environmental quality, and are awarded on demonstration of the ability to conduct original scientific investigations.

Research facilities for modern studies on many diverse kinds of organisms, environments and resources are available. The Institute of Ecology operates an animal behavior laboratory and two limnological stations. In addition, well-equipped and staffed University stations covering a range of natural and managed ecosystems are close at hand; marine, coastal mountain, agricultural, and Sierran foothill and alpine sites are included. The Library contains 750,000 volumes and its coverage in ecology is excellent.

University of California, Irvine

Dr. Howard A. Schneiderman, Dean
School of Biological Sciences
University of California, Irvine
Irvine, California 92664

Population and Environmental Biology (M.S., Ph.D.)

University of California, Los Angeles

Chairman
Department of Geography
University of California
405 Hilgard Avenue
Los Angeles, California 90024

Analysis and Conservation of Ecosystems (B.A.)

As of September 1971, the Department of Geography, University of California, Los Angeles, will offer two related majors leading to the B.A. One is the regular and fairly standard Geography Major. The second is the alternate B.A. in Analysis and Conservation of Ecosystems. This alternate major has two plans, each varying slightly in courses and collateral preparation. Plan I is designed for students desiring a general education focused on gaining an understanding of problems and issues related to past, present, and future human manipulation and utilization of the world's ecosystems and to those students who wish to be the foundation for educational contributions to non-academic society via the principal communicative media. Plan II is designed for students who wish to pursue future work at the graduate level and beyond in various aspects of the analysis and conservation of ecosystems. Like Plan I, this is a deliberately broad major but is more rigorous in terms of the mathematics demanded.

Students electing to follow Plan II must complete, prior to the senior year, study in one modern foreign language to the extent that an adequate level of reading comprehension of materials in the social sciences-ecology-humanities areas has been gained. The student may use whatever procedures he deems most useful to fulfill this requirement.

All students will be required to write a substantial Senior Paper which will be presented at a prescribed time prior to date of graduation. All students must work in close and frequent consultation with a faculty advisor. A principal feature of this major is that a high degree of emphasis is placed upon student input–particularly in respect to seminars–and it is therefore mandatory that close liaison be maintained between all involved persons.

University of California, Santa Barbara

Chairman
Environmental Studies Committee
University of California, Santa Barbara
Santa Barbara, California 93106

Environmental Studies (B.S.), Interdisciplinary Degree

Environmental Studies offers direction to students interested in the total environment and its management. The major is designed to give the student a knowledge of the characteristics of the environment and the working approaches to the solution of environmental problems. An Environmental Studies major may be useful as preparation for careers in government, law, business, journalism, and elementary and secondary teaching. Students desiring graduate work in the sciences or social sciences should be aware of the admission requirements of graduate programs and the necessity of early planning to meet them.

University of California, Santa Cruz

Chairman
Environmental Studies Program
University of California, Santa Cruz
Santa Cruz, California 95060

Environmental Studies (B.A.)

Designed to free the University from the limitations of classroom instruction and to involve students in the solution of environmental problems, the Santa Cruz Program in Environmental Studies opened in September, 1970. Supervised by an interdisciplinary faculty committee, the Program engages in a broad spectrum of activities. Several staff members and the chairman of the faculty committee devote full time to the development of the Program. Not a department, and not hiring regular faculty itself, the Program is a coordinating center for courses, lectures, publications, and research. It organizes and finances innovative projects that bring faculty, students and community together to solve environmental problems.

The purpose of the Santa Cruz Program in Environmental Studies is to meet the needs of students and society through projects of research, public service, and information distribution. To fulfill this purpose, the goals of the Program are (1) to develop a learning center, focusing the total resources of the University on environmental issues; (2) to engage in activity which is directly useful in the solution of environmental problems; and (3) to involve undergraduate students in every aspect of environmental problem solving.

Chico State College

Dr. Donald Hall
Administration Building
Chico State College
Chico, California 95926

Proposed: Environmental Studies Degree

Chico State College

Dr. Dale Swire
Recreation and Leisure Studies
Chico State College
Chico, California 95926

Park and Recreation Administration (B.A. and M.A.), emphasis in outdoor education and camping

Outdoor education and camping is an emphasis area which may be pursued at Chico State College within the degree program for Recreation Administration and Leisure Studies. Students with this emphasis complete a minimum of four courses relating to the emphasis in addition to a field work experience. The M.A. degree also allows for specialized study in this area.

Humbolt State College

School of Natural Resources
Humboldt State College
Arcata, California 95521

Natural Resources (B.S.), emphasis in Conservation Education

Minor in Natural Resources (for students who major in another field, especially Education majors)

Public and private conservation agencies now find that public education is one of their biggest tasks. New positions for specialists with resource training and an ability to communicate with the public have been created. The demand for such specialists was responsible for a recent revision in the Natural Resources curriculum at Humboldt State College. This program, leading to a Bachelor of Science degree in Natural Resources, is designed to train students for positions involving public information and education activities. The Natural Resources curriculum is patterned to quality trainees for work as: (1) Information and Education specialists in State Fish and Game work; (2) for Interpretive (Ranger)-Naturalist positions with State and National Park and Recreation agencies; (3) for research and administrative positions in the expanding field of Outdoor Recreation; (4) for Conservation Education work in the public schools and private agencies; and (5) as an aid to resource specialists who will advance to administrative positions.

In addition to training students for positions in natural resource agencies, the NR curriculum provides a broad base from which

to advance to graduate research in a more specialized field–such as Fisheries, Wildlife, or Outdoor Recreation.

Students who major in some other field of interest and minor in Natural Resources will find this curriculum an aid in applying conservation concepts in their field of work.

Sacramento State College

Chairman
Department of Biological Sciences
Sacramento State College
Sacramento, California 95819

Biological Conservation (B.S.)

Sacramento State College

Director
Ecological Studies Program
Sacramento State College
Sacramento, California 95680

Ecological Studies (B.A., M.A.)

At the time of publication of this directory, it was expected that the B.A. degree would probably be approved for conferring in June 1971 and the M.A. for conferring in June 1972 or 1973. Both programs are offered as multidisciplinary and are administered by an Institute of Ecological Studies, independent of existing departments.

The objectives of the above programs are to fill a need for broadly trained people in the environment area. The recent explosive growth of national and international interest in ecology and increasing need for ecologically compatible manipulation of the environment makes such a need obvious.

Sacramento State College

V. Aubrey Neasham, Chairman
Department of Environmental Resources
Sacramento State College
Sacramento, California 95680

Environmental Resources (B.S.), with concentrations in Park Administration, Park Interpretation, Park Planning, and Resource Management

The B.S. program in environmental resources is a 132-unit professional curriculum which draws upon many disciplines to provide a broad background of instruction for prospective administrators, planners, interpreters, and technicians in the fields of park management, outdoor recreation, and resource management. The major is based on a core program of 33 units in various departments, plus a concentration of 32 units in environmental resources. In addition, an approved concentration of 12 units is required in a related field. They include:

(1) Park Administration: Keyed to provide the student with a background suited for employment in the various local, regional, state, and national park systems as a park administrator, manager, or ranger.

(2) Park Planning: Designed to assist a student to move into a professional capacity in planning and design.

(4) Resource Management: Designed for those interested in the recreation-resource programs of multiple-use agencies such as the National Forest Service, the Bureau of Sport Fishery and Wildlife, Bureau of Indian Affairs, etc.

San Diego State College

Chairman
Department of Biology
San Diego State College
San Diego, California 92115

Biology (M.A., M.S.) Program area in Ecology

Ecology (Ph.D.)

The Ecology Program Area within the Department of Biology, San Diego State, and the College of Biological and Agricultural Sciences at the University of California, Riverside offer a joint doctoral program leading to the degree of Doctor of Philosophy in Ecology.

Graduate studies for the joint Doctor of Philosophy degree in Ecology are oriented toward the development of the capacity for independent, imaginative, and self-critical research, and toward excellence and enthusiasm in teaching. By common agreement of the two groups in the joint program, much reliance is to be placed on informal instruction through increasing close attention of the student with the faculty, and through regular seminars. After developing an adequate background and becoming familiar with the research activities of the faculty, the student will begin research on a problem of his choice, generally in his second year.

San Diego State College

Chairman
Department of Geography
San Diego State College
San Diego, California 92115

Geography (M.A.), specialization in Conservation

The Master of Arts degree in Geography with a specialization in conservation is designed to provide students with an understanding of man's environment in an urban society. Two plans are offered in the 30-unit program. Plan A includes the thesis whereas under Plan B two research papers are required. For either plan, a final comprehensive oral examination is required. More than 25 courses relating to conservation are offered each year and include the following titles: (1) Conservation of Environmental Quality, (2) Conservation of Natural Resources, (3) Geography of Human Ecology, (4) Water Resources, (5) Geography of Recreational Land Use, (6) Geography of Marine Resources, (7) Seminar in Theory of Resource Use, (8) Seminar in Environmental Quality, (9) Seminar in Recreational Geography, and (10) Internship with Resource Organizations.

Graduates may obtain positions in a variety of areas including traditional conservation-oriented organizations, educational institutions, and planning organizations concerned with environmental quality in an urban environment.

San Fernando Valley State College

Tal Morash
Department of Recreation
San Fernando Valley State College
San Fernando, California 91340

Recreation Resources Administration (B.S.)

Proposed: Outdoor Recreation and Resources Administration (M.S.)

Recreation Resources Administration focuses upon the competencies needed for the Acquisition, Planning, Development, and Administration of Recreation of Recreation Lands and Waters.

The competencies essential to the area of Outdoor Recreation and Resource Administration that are to be developed are:

(1) An understanding of the inter-relationships and uniqueness of problems including technical contributions of various areas related to outdoor recreation, e.g., forestry, parks recreation, wildlife management

(2) An understanding of the basic principles related to planning of local, state, and regional areas

(3) An understanding of the principles and procedures related to planning, development, design, and maintenance of recreation areas and facilities

(4) An understanding of programming for outdoor recreation, including functions of unorganized activity, types of activity, and the requirements (areas and facilities, leadership, finance, etc.) of each

San Francisco State College

Department of Ecology and Systematic Biology
San Francisco State College
1600 Holloway
San Francisco, California 94132

M.A. in Education with a concentration in special interest area - Outdoor Education

There is mounting evidence in the form of state surveys and ESEA reports that outdoor education in its many and varied forms is firmly established in many public school systems, and continues to expand at an ever-increasing rate. It is believed that extending the classroom into the natural environment out-of-doors provides a stimulating climate for implementing educational objectives. This is accomplsihed by means of a direct experience, multi-sensory approach to learning which is considered more meaningful than vicarious experience alone.

If school districts and county officers are to provide competent and qualified personnel to develop and work in the field of outdoor education, professional preparation should have three primary areas of emphasis:

(1) Recognizing the use of "direct experience approach to learning" in the outdoor laboratory as a means to more effective and efficient learning

(2) Relating all aspects of the school curriculum and goals of education to appropriate experiences and sequences in various types of outdoor environments

(3) Practical experience in different kinds of outdoor programs in such roles as teacher, resource person, supervisor, or administrator

The course of study for a Master of Arts Degree in Education is designed to prepare personnel with the background necessary to provide leadership in outdoor education.

San Jose State College

Dr. Donald W. Aitken, Chairman
Department of Environmental Studies
San Jose State College
San Jose, California 95100

Environmental Studies (B.A.)

Environmental Science (B.S.)

The Department of Environmental Studies was created on September 1, 1970, to coordinate diverse environmental curricula–and create supplementary curricula and activities–into an integrated degree-granting program. During the first year, courses were offered on an experimental basis, to reveal the best elements of a permanent program.

The B.A. degree will be a general education degree centered around a comprehension of the earth's ecosystem and man's interaction with it, but not aimed at any particular skill or occupation. It will be a genuinely interdisciplinary program, although the scientific "heart" will be in biology.

The B.S. degree will require that the student take an "option" in the form of a condensed major in a technical area, so that he can emerge with useful expertise applicable toward a career related to environmental protection.

COLORADO

Adams State College

Dr. James H. Craft
Department of Biology
Adams State College
Alamosa, Colorado 81101

Proposed: Environmental Sciences (B.A.)

Proposed: Selected Studies (B.A.), with an emphasis in environment

In addition to the major in Environmental Science, the student will complete a minor of at least 27 quarter hours in either biology, chemistry, earth science, geology, or physics.

The program in Selected Studies is a new one and is open-ended. It is not directly oriented toward a profession. Students, after consultation with an academic counselor, select the courses that will, in their opinions, be most useful and appropriate to their needs. Forty percent of their courses must be in the upper division (i.e. junior or senior level courses).

Colorado State University

Arthur T. Wilcox, Head
Department of Recreation Resources
Colorado State University
Fort Collins, Colorado 80521

Recreation and Watershed Resources (B.S., M.S., Ph.D.)

Outdoor Recreation, options in Parks and Recreation, Planning, and Environmental Interpretation

The Outdoor Recreation major in Recreation Resources Department offers an option in Environmental Interpretation. The principal objective is to train students in areas which will prepare them to assume positions as naturalists, visitor information specialists, and environmental interpretation officers. Students may select electives to qualify for teaching certificates with emphasis in the biological sciences and conservation education.

University of Colorado

Tim K. Kelley
Department of Geography
University of Colorado
Boulder, Colorado 80302

Conservation Education (B.A.)

Geography (M.A., Ph.D.), with an emphasis on Conservation

The program leading to a B.A. in Conservation Education was initiated in January 1950. It provides a sound ecological background in the field of conservation and training in the various media of communication so this environmental knowledge may be conveyed to the public. It included a background in biology, ecology, communication, education, journalism, and geography.

The program is designed to prepare the student for employment on the state, local, or federal level in various aspects of conservation.

On the graduate level (M.A., Ph.D.), the degree is in Geography, but with an emphasis in conservation and usually involved with the areas of specialization of the Department–arid lands, arctic environments, water and other resources and physical geography.

University of Northern Colorado

Dr. Vince A. Cyphers
Coordinator Outdoor Education Program
University of Northern Colorado
Greeley, Colorado 80631

Interdisciplinary master's degree program in Outdoor Education

CONNECTICUT

University of Connecticut

Professor Miklos Gratzer
College of Agriculture and Natural Resources
University of Connecticut
Storrs, Connecticut 06268

Natural Resources Conservation (B.S.)

University of Connecticut

Dr. Herbert Tag
School of Education
University of Connecticut
Storrs, Connecticut 06268

Secondary Education (B.S.), with an emphasis in outdoor education

University of Connecticut

Professor Henry N. Andrews
Systematic and Environmental Biology
University of Connecticut
Storrs, Connecticut 06268

Biology (M.A., M.S., Ph.D.) with a program in systematics and Environmental Biology

Yale University School of Forestry

Yale University School of Forestry
205 Prospect Street
New Haven, Connecticut 06511

Master's Degree in Forestry Science, conservation education program

All programs are tailored to the needs of the student and conservation education is definitely one of the avenues open.

DELAWARE

University of Delaware

Professor Ely Scarborough
Department of Agricultural Engineering
University of Delaware
Newark, Delaware 19711

Agricultural Engineering (B.S. in Agriculture), with an emphasis in Soil and Water Conservation

The emphasis in soil and water conservation deals with the application of irrigation, drainage, erosion control, land and water management practices, to the wise use and preservation of our vital soil and water resources. As world population increases, with greater demands for food, lands now in production must be reclaimed and lifegiving water must be brought to arid areas. Agricultural engineering–in shaping and surfacing fields, terracing, canal design, pond construction–is a major factor in economic agricultural production. Rapidly increasing demands on existing water supplies place added emphasis on sound water use and conservation practices.

University of Delaware

Dr. W. E. McDaniel, Dean
College of Agricultural Science
University of Delaware
Newark, Delaware 19711

Entomology (B.S., M.A.), with an option in ecology

The Department of Entomology and Applied Ecology offers an option in ecology within entomology. This is an introductory program that involves wildlife conservation and ecology. The courses are designed to provide a student with sufficient background for advanced studies or to beginning positions in wildlife management and conservation.

University of Delaware

Dr. W. E. McDaniel, Dean
College of Agricultural Science
University of Delaware
Newark, Delaware 19711

Entomology (B.S., M.S.), with an option in ecology

The Department of Entomology and Applied Ecology offers an option in ecology within entomology. This is an introductory program that involves wildlife conservation and ecology. The courses are designed to provide a student with sufficient background for advanced studies or to beginning positions in wildlife management and conservation.

University of Delaware

Population Curriculum Study
College of Education
University of Delaware
Newark, Delaware 19711

Population–Environment Education (m.Ed.)

DISTRICT OF COLUMBIA

FLORIDA

Florida Atlantic University

Chairman
Department of Biological Sciences
Florida Atlantic University
Boca Raton, Florida 33422

Conservation Biology (B.A.)

The Department of Biological Sciences of Florida Atlantic University, a state university at Boca Raton, offers a conservation biology program leading to the Bachelor of Arts degree. The curriculum stresses field studies and their applications to environmental problems.

Holders of the degree will be trained to work as modern conservation and environmental specialists in municipal, county, state and federal agencies; as nature and conservation center administrators and staff; as conservation task force coordinators and lobbyists; as conservation teachers; and as research workers in the general areas of environmental control including the important problems of urban pollution.

University of West Florida

Dr. Herman C. Kranzer
Faculty of Elementary Education
University of West Florida
Pensacola, Florida 32504

Now in process of establishing an interdisciplinary Environmental Science Program, set up as a separate department. Plans are also being made for a master's degree in recreation where students will be able to get an emphasis in outdoor education, conservation, or nature interpretation.

GEORGIA

HAWAII

IDAHO

ILLINOIS

Eastern Illinois University

Dr. Leonard Durham, Director
Division of Life Sciences
Eastern Illinois University
Charleston, Illinois 61920

Environmental Biology (B.S.)

The undergraduate major in environmental biology requires 76 quarter hours in botany and zoology and 48 hours in selected related courses from the physical and social sciences. General education requirements for the undergraduate degree, Bachelor of Science, must also be met.

Current attention to ecological survival has revealed the need for broadly trained environment scientists who can help solve problems of pollution, conservation, and environmental quality and control. Therefore, the objectives of this program are:

(1) To allow students who are interested in environmental problems to pursue an integrated program in the life sciences and training in related areas from physical and social sciences

(2) To produce skilled individuals for responsible administrative and technical positions in governmental or industrial agencies concerned with human ecology

(3) To prepare students for graduate training in specialized aspects of environmental biology and life sciences

A unique aspect of the program is an internship for which the student receives academic credit. The internship consists of practical experience with an agency concerned with environmental quality.

George Williams College

Dr. Lyle K. Johnson, Director
Division of Applied Behavorial Science
George Williams College
555 Thirty-first Street
Downers Grove, Illinois 60515

Applied Behavioral Science, Recreation Studies (B.S., M.S.), emphasis in camping and outdoor education

George Williams College

Nelson E. Wieters
Graduate Department
Camping and Outdoor Education Administration
George Williams College
555 Thirty-first Street
Downers Grove, Illinois 60515

Camping and Outdoor Education Administration (M.S.)

The development of organized camps, outdoor recreation, and education together with the current trend toward the employment of full-time administrators in these areas have increased the importance of qualified professionals.

The program in camping and outdoor education is designed to give students the educational programming and preparation needed for administration in these career areas. The unique contributions of camping and outdoor education experiences combined with the specific body of knowledge related to the organization and administration of these experiences serve as the foundation of the program of study.

The two-year degree program incorporates related electives of nature interpretation, conservation education, land management, institutional business management, outdoor education, social recreation practice, and philosophy of leisure. Students spend a full quarter in field work placement in the Lake Geneva Campus Outdoor Education Program.

Kankakee Community College

Dr. David L. Ferris
Continuing Education
Kankakee Community College
P. O. Box 888, R.R. 1 River Road
Kankakee, Illinois 60901

Outdoor Education (Certificate)

This is a one-year certificate program, the first of its kind in the state. The program consists of courses in tennis, golf, fly-tying, fishing and casting, boating, family camping, taxidermy, landscaping, and gardening.

University of Illinois

Professor Allen V. Sapora, Head
Department of Recreation and Park Administration
104 Huff Gymnasium
University of Illinois
Champaign, Illinois 61820

Recreation (B.S., M.S.), specialization in outdoor recreation and education

Physical Education (Ph.D.), with an option in recreation and specialization in outdoor recreation and education

Specialization in outdoor recreation and education is available within the Department and in cooperation with other departments and agencies within the University. Courses and research projects are available in such areas as land analysis and planning, water resources, and programs concerning parks, environmental education, school-related programs and organized camping.

The curriculum is currently being revised and options being broadened to include camping, outdoor education, outdoor recreation, resource planning, and nature and environmental interpretation.

Northern Illinois University

Dr. Donald R. Hammerman, Head
Department of Outdoor Teacher Education
Lorado Taft Field Campus
Oregon, Illinois 61061

Outdoor Teacher Education (M.S. in Ed.)

The Lorado Taft Field Campus, a branch of Northern Illinois University, has become internationally known for its programs in Outdoor Teacher Education. Its Master's Degree in Education with a mjor in Outdoor Education is one of the oldest and best-known degree programs of its type in the country.

A rich summer program, including courses by other University departments, is an important feature of the year-round operation at Lorado Taft Field Campus. It is the policy of the Department of Outdoor Teacher Education to offer most of its courses each summer.

Graduates hold positions as classroom teachers involving their classes with outdoor learning experiences, full-time outdoor education teachers, directors of outdoor education programs and professors of courses offered in the area of outdoor education.

Northwestern University

Dr. Lawrence I. Gilbert, Chairman
Department of Biology
Northwestern University
Evanston, Illinois 60201

Biology (M.S., Ph.D.), with a major program of study in Environmental Biology

Southern Illinois University

Paul F. Nowak, Chairman
Department of Conservation and Outdoor Education
Southern Illinois University
Carbondale, Illinois 62901

Conservation and Outdoor Education (M.S. in Ed.)

Outdoor Education can be an emphsis within any number of majors, e.g., elementary education, recreation education or forestry.

Southern Illinois University

Ray Mischon
Department of Forestry
Southern Illinois University
Carbondale, Illinois 62901

Outdoor Recreation Resources Management (B.S., M.S.) with concentrations in social science, biological science, managerial science, and natural science.

Southern Illinois University

Dr. William E. O'Brien, Chairman
Department of Recreation
Southern Illinois University
Carbondale, Illinois 62901

Recreation (B.S., M.S., Ph.D.), option in Outdoor Education

INDIANA

Ball State University

Director
Natural Resources Institute
Ball State University
Muncie, Indiana 47302

Natural Resources (B.A., B.S., M.A., M.S.), options in (1) Resource Geography, (2) Fishery Resources, (3) Communications, (4) General Natural Resources

The Natural Resources Program at Ball State University is designed to (1) sensitize people to our environmental crisis, (2) provide an understanding of environmental problems, and (3) develop a competence in humaneering (helping people) to improve our environment.

Curricula offered in Natural Resources includes (1) an undergraduate minor, (2) an undergraduate major with options in Resource Geography, Fishery Resources, Communications, and General Natural Resources, (3) a graduate minor and major for the Master's Degree and (4) a Cognate for doctoral programs. All curricula at Ball State are interdisciplinary and students may include courses from a number of departments in fulfilling the requirement for the Bachelors or Masters Degree. In addition, a number of Natural Resources courses have been developed specifically for these curricula.

The Natural Resources Program at Ball State is administered by the Natural Resources Institute which also emphasizes environmental improvement through research and extension science activities. Challenging and interesting programs have been developed in cooperation with public schools, resource agencies, and conservation organizations in the general area of conservation-outdoor-environmental education.

Students considering a professional career in the general area of environmental studies should plan their high school program to include a good background in both science and the humanities. An interest in and a desire to work with people is also an important prerequisite. A competence in humaneering will be equally as important as technology in solving our environmental problems in the future.

Indiana University

Dr. Theodore Deppe, Chairman
Department of Recreation and Park Administration
Indiana University
Bloomington, Indiana 47401

Recreation (B.S., M.S. Re. Dir., Re. D.), emphasis in camping and outdoor education

The emphasis in camping and outdoor education is for those students whose major concerns are with outdoor recreation, conservation, and camping.

The undergraduate program is intended for students interested in teaching or interpretive services in the field of outdoor education, outdoor recreation, and camping. A teaching minor, usually a science minor, or a teaching credential is included in the emphasis. It also includes a program teaching or practice teaching in an outdoor education program.

Indiana State University

Dr. Christopher P. Sword, Chairman
Department of Life Sciences
Indiana State University
Terre Haute, Indiana 47809

Life Sciences (M.A. - Thesis, Departmental; Ph.D. - Thesis Departmental; M.S. - Non-Thesis, Secondary Teaching; M.A. - Thesis, Secondary Teaching), specialization in ecology

The Department of Life Sciences was created by the unification of three areas of science: biology, botany, and zoology. In addition to the graduate programs offered in these areas of specialization, considerable efforts also have been made toward the integration of course offerings and research facilities to develop training programs in interdisciplinary areas of biology such as ecology and physiology. A major objective of the Department is to give insight to students concerning the structure, function, inter-relationships, and evolution of life at all levels of organization. Programs are designed to prepare a student for academic, industrial, or governmental careers.

The geographic area surrounding the University provides

a diversity of natural habitats and biota for study. Agriculture, industrial, and mining activities in this area have created a spectrum of modified conditions which provide problems for research of immediate and long-term interest.

Purdue University

W. C. Bramble, Head
Department of Forestry and Conservation
Horticulture Building
Purdue University
Lafayette, Indiana 47907

Conservation and Conservation Education (B.S., M.S., Ph.D.)

Purdue's program in conservation of natural resources offers four areas of emphasis structured around the current problems of the human environment. National campaigns for beautification, cleaner air and purer water have focused public attention on these important areas. The growing demand for environmental control and recreational management has opened up many new jobs for those with the right training.

The areas of emphasis offered in the conservation program are: (1) General Conservation which offers opportunities for either a liberal scientific education leading to graduate study or a career in general natural resources management; (2) Outdoor Recreation Management for careers in business or public administration of recreation areas; (3) Nature Interpretation to train students for eventual administration of nature interpretation programs in national, state, and local parks and forests, private and agency nature centers, camps and educational areas and (4) International Conservation to prepare a student for participation in the worldwide developmental activities of industries, governments, and international organizations.

Purdue University

Ronald L. Giese, Director
Natural Resources and Environmental Science Program
Entomology Hall
Purdue University
Lafayette, Indiana 47907

Environmental Science (B.S.)

Graduate program being developed

Natural Resources and environmental science is designed to develop individuals qualified to deal with environmental problems. The School of Agriculture offers a curriculum which faces the problems of environmental quality as it relates to human welfare. This is an interdisciplinary curriculum with academic offerings encouraged throughout the University. It is problem-focused and provides the flexibility to develop individual study plans that will prepare the student to contribute to the solution of environmental problems. The curriculum emphasizes the concepts of organisms, their inter-relationships and responses to limiting factors which are inseparable from management, and utilization of resources such as soil, water, and their natural and artificial components.

Graduates of this program will find opportunities as technical, scientific, or support personnel with local, state, or federal agencies; agriculture, industry, wildlands, or conservation organizations, or the field of environmental journalism and education.

A graduate program is being developed in Environmental Science.

KANSAS

Kansas State Teachers College

Thomas A. Eddy
Department of Biology
Kansas State Teachers College
Emporia, Kansas 66801

Biology (B.A.), with an emphasis in ecology

Kansas State University

Natural Resource Conservation and Use
College of Agriculture
Kansas State University
Manhattan, Kansas 66502

Natural Resources Conservation and Use (B.S.) options in (1) Economics of Conservation, (2) Soil and Water Conservation, (3) Conservation of Recreational Areas

Each student in the Natural Resource Conservation and Use Curriculum is assigned an individual advisor within the student's chosen field. Individual attention plus programs tailored to fit individual requirements is the watchword.

The curriculum will provide students opportunities to work in scientific, operational, or management activities. Demand also is great for persons with advanced degrees in areas dealing with natural resources.

Students can choose to major in one of three options:

(1) Economics of Conservation - Students who emphasize the economics of conservation deal with planning, developing, and using natural resources on private and public lands

(2) Soil and Water Conservation - Selecting and developing plants that use water more efficiently; providing a scientific inventory (soil survey) for use in rural and urban planning; increased crop production through soil management; understanding soil needs through research; erosion control and contour farming; reducing runoff and preserving valuable watershed; increasing ground water recharge, and maintaining stream flow and water purity are problems of vital concern. Students of soil and water conservation learn how to deal with such problems.

(3) Conservation of Recreation Areas - Students interested in conserving recreational areas gain a broad knowledge of the physical and biological processes operating in land, water, plants, and wildlife in a recreational area.

KENTUCKY

LOUISIANA

Northwestern State University

Dr. Warren R. Evans, Chairman
Division of Outdoor Education and Recreation
Department of H. P. E. and R.
Northwestern State University
Natchitoches, Louisiana 71457

Outdoor Education (M.S. in Ed.)

The program provides basic courses in Outdoor Education and related fields and allows students to select courses in several departments. By cutting across department lines, individual programs may be designed for students to strengthen their academic background and also allow

them to be introduced to new fields of study which will relate to their plans to conduct education programs in any curriculum area in outdoor situations.

Objectives of the program are to prepare teachers for leadership roles in outdoor education; to provide for the needs of progressive school systems which are going to need these people in ever-increasing numbers as they provide programs in this vital curriculum area.

An additional specific and important aim is to convince teachers that real experiences are often better than vicarious ones for children and youth in schools and to show them how to provide these real experiences.

Tulane University

Professor Volpe, Chairman
Department of Biology
Tulane University
New Orleans, Louisiana 70118

Biology (M.S., Ph.D.), graduate training and research in Environmental Biology (Ecology and systematics)

MAINE

College of the Atlantic

Admissions
College of the Atlantic
P.O. Box 3
Bar Harbor, Maine 04609

Human Ecology (B.A.)

The college opening in 1972 will offer a residential program leading toward a Bachelor of Arts in Human Ecology. The new college is designed to meet some of the changing needs of higher education.

A unique, problem-centered, interdisciplinary curriculum is being designed to study human ecology. Concentrations will be offered which are most relevant and important to the understanding of man's dependence upon and responsibility to his environment, both natural and created. A focus on human ecology. . . . the study of interdependence of man and his environment. . . . will be the unifying factor for the curriculum.

University of Maine

Dr. D. W. Bishop
College of Education
140 Education Building
University of Maine
Orono, Maine 04473

Environmental Education Specialist (M. Ed., Ed. D.)

Classroom Teacher (M. Ed.), emphasis in Conservation Education

University of Maine

Dr. Winston E. Pullen
College of Life Science and Agriculture
Winslow Hall
University of Maine
Orono, Maine 04473

Natural Resource Management (B.S.), option in conservation, engineering, soil and water conservation, forest resources, and resource economics

Resource and Business Management (Associate of Science)

An educational program of study has been developed to meet the need for informed and trained individuals. A first objective of the Natural Resources Management Program is to provide a balanced education in the physical, biological, and social science, the humanities, mathematics, and communication skills. This is the first and most basic component of a sound and meaningful education.

The second major objective is to provide the student considerable expertise and depth of understanding in a specialized area of resource management. This phase can be described as the vocational component.

Professional specialization, the vocational component is provided in four areas of study selected by the student in line with his interests and educational goals. These options are:

(1) Conservation Engineering: Engineering principles and technology related to the conservation of natural resources

(2) Soil and Water Conservation: Principles of soil and water science relevant to conservation and hydrology

(3) Forest Resources: Multiple use and management of forest lands and the conservation of wildlife and habitat

(4) Resource Economics: Economic and business management aspect of resource development

University of Maine

Director
Physical Education and Athletics
University of Maine
Orono, Maine 04473

A new curriculum in Recreation Education, including Outdoor Education is in the planning stages and soon to be approved.

MARYLAND

University of Maryland

Dr. Ellen E. Harvey, Head
Department of Recreation
College of Physical Education, Recreation and Health
University of Maryland
College Park, Maryland 20742

Recreation (B.S., M.A.), emphasis in Outdoor Education

The Recreation Department of the University of Maryland offers both undergraduate and graduate work in the outdoor education-recreation area. On the undergraduate level a student takes a basic core of required courses (including "Naturelore", interpretive-project approach, two in camping area, plus "Leadership Techniques", Organization and Administration, etc.) plus four in the option area, two required, "Principles of Conservation" and "Elements of Forestry," and two elected from ecology, entomology meterorology, outdoor education workshop, etc.

The graduate degree, an M.A., is based on a person's interests and needs as represented by their undergraduate degree and a required diagnostic exam. Of principal value is the summer 6 credit outdoor education workshop and the opportunity to work through the workshop and the "Summer in the Park" summer camp for inner-city children from Washington, D.C. and Baltimore, Maryland.

The latter workshop particularly provides "certification endorsement for outdoor education" for Maryland teachers. Undergraduate and graduate students also are being

employed at nature centers and parks, in recreation departments as nature specialists, as camping specialists (day or resident), etc. Opportunities are and will be on the increase with the present emphasis on ecology and environmental affairs, federal interest and funding (National Park Service and others), state and local participation, citizens groups and the like.

MASSACHUSETTS

Boston University

Dr. James A. Wylie
School of Education
765 Commonwealth Avenue
Boston Massachusetts 02215

Outdoor Education and School Camping (B.S. in Ed., Ed.M., Ed.D.)

Outdoor Education Programs are separately designed to meet the needs and interests of the individual students. Great latitude is available to do this at Boston University. Positions in Outdoor Education held by students include teachers of outdoor education, supervisor of field experiences in outdoor education, and directors of outdoor education programs.

Harvard University

Chairman
Department of Environmental Sciences and Engineering
Harvard University
Cambridge, Massachusetts 02138

Environmental Science

University of Massachusetts

Dr. W. E. Randall, Head
Department of Recreation
University of Massachusetts
Amherst, Massachusetts 01002

Recreation (B.S.), with options in environmental interpretation and natural history interpretation.

The catalog description of the curriculum includes the statement that, ". . . . the student will consult with his advisor to select an appropriate option. He will then devote not less than eighteen of his elective credits to courses identified in the current departmental list for that option." The environmental interpretation option prepares a student for work in national and state parks, museums, and community nature centers.

University of Massachusetts at Amherst

Professor John A. Naegele
Department of Environmental Science
University of Massachusetts at Amherst
Amherst, Massachusetts 01002

Environmental Science

University of Massachusetts at Amherst

Joseph Larson
Department of Forestry and Wildlife
University of Massachusetts at Amherst
Amherst, Massachusetts 01002

Proposed: Natural Resources Ecology

A proposed flexible program, permitting a student to create his own mix of basic science, resource management, social science, engineering and humanities courses.

Springfield College

Mr. Joel Cohen, Chairman
Biology Department
Springfield College
Springfield, Massachusetts 01109

Environmental Studies (B.S., B.A.)

An undergraduate program in Environmental Studies has been prepared for students concerned with the human habitat and wishing to pursue careers dedicated to helping improve it–a human service too long neglected. The program makes possible many patterns of study by synchronizing the arts and sciences so that they can mesh meaningfully with professional studies in education, community affairs, recreation, health and physical education for ecologically sensitive learning, living, and leisure. Emphasis is on the balance betwen the artificial and the natural in emerging life-styles to help The Whole Man in a Wholesome World.

A curriculum carefully composed for his own needs by each student in Environmental Studies will provide a general education including emphasis on the environment and his relation to it, plus courses especially designed to enable students to interpret environments to others and/or to manage environments for the benefit of their fellow man.

Springfield College

Dr. Robert E. Markarian, Director
Division of Community Education
Springfield College
Springfield, Massachusetts 01109

Community and Outdoor Recreation (M.Ed.), emphasis in Outdoor Conservation and Camping Education

Outdoor Education (B.S., B.A., M.Ed.)

The graduate program in Community and Outdoor Recreation provides preparation for recreation leaders in administrative and program positions under community, school, state, and federal (including military) auspices as well as in voluntary, private and commercial organizations with philanthropic or membership support.

Established programs in Community Education include emphases on Outdoor Education and Conservation. The recently adopted departmental courses in ecology will be included as an important part of these programs. Graduates may be expected to work with schools that maintain either camping programs or an outdoor center which provides learning opportunities for classes which are brought to it.

Springfield College

Director
Graduate Teacher Education
Springfield College
Springfield, Massachusetts 01109

Certificate of Advanced Study in Teacher Education, specialization in school camping and outdoor education

Students who have completed the Master's degree, or its equivalent, may be interested in pursuing an advance program leading to a Certificate of Advanced Study. This is the equivalent of one year, or 32 semester hours, beyond the Master's degree. Each individual program is planned on an individual basis. At least three years of

successful teaching experience in addition to the Master's degree are prerequisite to the awarding of the Certificate. A field of specialization will be required of all students consisting of a minimum of 12 semester hours. One area of specialization that is provided is in school camping and outdoor education.

MICHIGAN

Central Michigan University

Chairman
Department of Biology
Central Michigan University
Mount Pleasant, Michigan 48858

Natural Resources and Liberal Arts (five-year program leading to a B.S. from Central Michigan University and M.S. from the University of Michigan)

Forestry and Conservation (two-year preparatory curriculum)

Conservation Minor

Natural Resources and Liberal Arts–a five-year curriculum (three years at CMU and two years at the University of Michigan) leading to a Bachelor's Degree from CMU and a Master's Degree from the University of Michigan. This curriculum prepares the candidate to be an effective leader and assume a responsible position in agencies that deal with conservation of our natural resources.

Forestry and Conservation–a two-year curriculum preparatory to professional forestry or conservation in the Department of Natural Resources or similar agency.

Conservation Minor–this minor can be obtained under several curricula at CMU (Elementary Education, Secondary Education, Liberal Arts, Applied Arts and Sciences). These curricula allow the candidate to obtain some expertise in the philosophy and practice of conservation and to utilize this knowledge in teaching and/or in community planning efforts.

Michigan State University

Dr. Julian W. Smith
Department of Administration and Higher Education
College of Education
Room 403 Erickson Hall
Michigan State University
East Lansing, Michigan 48823

Curriculum (M.A., Educational Specialist, Ph.D., Ed.D.), emphasis in Outdoor Education

Continuing Education (M.A., Educational Specialist, Ph.D., Ed.D.), emphasis in Outdoor Education

Minor emphasis in Outdoor Education (for graduate students majoring in disciplines outside the College of Education)

When outdoor education is conceived as being interdisciplinary in nature and cutting across all subject matter areas, it follows that graduate work in outdoor education is best pursued through an interdepartmental approach within an institution of higher education. Flexibility makes it possible for several established major areas within the College of Education to include outdoor education as an area of emphasis. Course work and activities related to outdoor education are woven into a candidate's major field.

The MSU College of Education graduate programs in outdoor education are designed to develop one's overall competence as a professional educator, to permit development of specialized professional competencies, and to extend one's knowledge in related fields such as conservation education, fisheries, and wildlife, resource development, biological sciences, social studies, health, physical education, and recreation, and other areas.

Outdoor Education may be an interest of graduate students majoring in disciplines outside the College of Education. In such cases, outdoor education may be a minor area of emphasis.

The Master's and Doctoral programs vary according to an individual's professional-educational background, interests, and professional plans for the future. An individual may major in one of several areas within the College of Education, such as administration, adult education or curriculum.

A program of studies for an emphsis in outdoor education includes workshops, seminars, and independent study related to outdoor education. The doctoral dissertation may be written in some phase of outdoor education.

There are increasing numbers of leadership positions in outdoor education in schools and colleges. Some of the job opportunities include–supervisors or coordinators of outdoor education for a school system, teacher-naturalists, teaching classes in outdoor education and camping, etc.

Michigan State University

Dr. Gilbert W. Mouser
Department of Fisheries and Wildlife
Room 9A Natural Resources Building
Michigan State University
East Lansing, Michigan 48823

Conservation Education (B.S., M.S., Ph.D.)

The undergraduate degree in conservation education embodies a study of the varied biological resources, followed by special instruction relating those resources to teaching. Students who wish to qualify for a secondary teaching certificate will complete the requirements for the Biology teaching major in the College of Natural Science. This is done through consultation with representatives from the College of Natural Science and the College of Education. Majors may also undertake more specialized nature training for employment as educational consultants, park naturalists or conservation curators in museums.

Michigan State University

Dr. Louis Tuardzik
Department of Park and Recreation Resources
School of Natural Resources
Michigan State University
East Lansing, Michigan 48823

Park and Recreation Resources (B.S., M.S.)

Natural Resources (Ph.D.)

University of Michigan

Admissions Office
Horace H. Packham School of Graduate Studies
The University of Michigan
Ann Arbor, Michigan 48104

Resource Planning and Conservation (M.S., Ph.D.), emphasis in ecology, economics, policy and institutions

Natural-Resource Economics (Ph.D.)

Natural Resources Administration (M.S.)

Ecology (Ph.D.)

Resource Planning: ecological emphasis: An understanding of ecology is essential to maintenance and enhancement of environmental quality. Ecological constraints to a great extent determine the limits of regional development and modification of the physical environment. Students usually are required to take at least one course in micro-economics, macro-economics, public finance theory and econometrics. Those interested in greater concentration in economics should investigate the Natural Resources Economics specialization.

Resource planning: policy and institutions: The expansion of governmental involvement in natural resources gives increasing importance to public policies and the institutions through which policies are formulated and carried out. The federal system of government places major reliance on techniques of policy control and direction of natural resource use. Thus, resource policy planning has become a vital part of federal administration and of state and regional planning. Competence in analyzing policy and institutional needs specializing in the ecological aspects of resource planning are expected to combine a thorough understanding of the biology of organisms, populations, and ecosystems, with an awareness of the way in which economics and policy decisions influence natural resource decisions. Individuals wishing to prepare for a career in basic ecological research should investigate the inter-departmental program in ecology.

Resource planning: economic emphasis: Economic analysis is playing an increasingly important role in evaluating natural resource programs. Resource planners recognize the need for a general understanding of the way in which the price system allocates resources and a specific understanding of the theoretical basis of such techniques as benefit-cost analysis and program planning and budgeting. In addition to natural resource courses, students interested in emphasizing economics will serve a variety of staff requirements in natural resource and planning agencies and in legislative committees, governmental study commissions, and research foundations.

Natural Resources Administration: The Department of Resource Planning and Conservation in cooperation with the Institute of Public Policy Studies directs a master's program designed to help meet the needs of persons who plan to work in branches of government concerned with natural resources.

Natural Resource Economics: This interdepartmental program is conducted jointly by the School of Natural Resources and the Department of Economics in the College of Literature, Science, and the Arts. The program is designed to join the analytical tools of the professional economist and those of the natural scientist and resource manager. The general objective of the joint program is to produce graduates who can qualify as professional economists and at the same time can apply their economic skills to issues of natural resource management and development with rigor and full understanding of the physical factors involved. Applicants must meet the admission requirements of both the School of Natural Resources and the Department of Economics in the College of Literature, Science, and the Arts. Upon satisfactory completion of the program the Packham School confers the degree Doctor of Philosophy (Natural Resource Economics).

Ecology: This interdepartmental doctoral program provides broad education in the principles, concepts, and applications of modern ecology, and intensive training in ecological research, particularly at the population and ecosystem level. It is intended to meet the needs of students with educational backgrounds outside the traditional biological curricula, who have developed a strong interest in ecology and in man's relation to his environment and those whose undergraduate education is in some field of biology and who wish to apply the specialized tools of mathematics, engineering, or physical science to ecological problems. The program is administered by a committee consisting of members of the Botany and Zoology departments in the College of Literature, Science, and the Arts, and the Forestry, Resource Planning and Conservation, and Wildlife and Fisheries departments in the School of Natural Resources.

University of Michigan

Dean
School of Natural Resources
University of Michigan
Ann Arbor, Michigan 48103

Conservation (B.S., M.S.)
Conservation and Teaching (B.S., M.S.)
Naturalist (B.S.)

Conservation: Intended for those who are interested in the broad aspects of natural resource use and conservation, this program is directed to the study of the interdependence between natural resources and today's society. Its curriculum emphasizes resource-use problems and stresses the integrated application of relevant natural and social science, rather than preparation for professional employment in a particular speciality.

Conservation and Teaching: Opportunities are available for students interested in directing outdoor conservation programs for elementary schools, teaching conservation courses at the secondary levels and serving as conservation consultants for school systems to integrate conservation into the total school program (K-12). A teacher's certificate is required for individuals employed by public school systems. A certificate to teach can be obtained while enrolled in an undergraduate or graduate program. Twenty credit hours of education are required for a certificate, with introductory psychology and fundamentals of public speaking as prerequisites.

Naturalist: The growing demand for nature-oriented programs in parks, museums, and similar public and private institutions has created a need for individuals who can interpret natural and human history and explain conservation concepts to people of all ages and with varying educational backgrounds. Interpretive naturalists must understand how plants and animals (including man), relate to each other and to their nonliving environment, and should be skilled in speaking (both indoors and in the field), writing, and creating museum displays and promotional materials.

This program, both through coursework and opportunities for working experience, is designed to provide graduates with a broad understanding in field biology, geology, geography, and related subjects such as astronomy, anthropology, and conservation. Naturalists are educated to communicate effectively, conduct field studies, and handle administrative responsibilities.

University of Michigan

Dr. William B. Stapp, Director
Environmental Education Programs
School of Natural Resources
University of Michigan
Ann Arbor, Michigan 48103

Environmental Education (M.A., Ph.D.)

Most current programs in conservation education are oriented primarily to basic resources; they do not focus on the community environment and its associated problems. Furthermore, few programs emphasize the role of the citizen in working, both individually and collectively,

toward the solution of problems that affect our well being. There is a vital need for an educational approach that effectively educates man regarding his relationship to the total environment.

This new approach, designed to reach citizens of all ages is called environmental education. We define it this way, Environmental education is aimed at producing a citizenry that is knowledgeable concerning the biophysical environment and its associated problems, aware of how to help solve these problems, and motivated to work toward their solution.

The major objectives of environmental education are to help individuals acquire: (1) A clear understanding that man is an inseparable part of a system, consisting of man, culture, and the biophysical environment, and that man has the ability to alter the inter-relationships of this system; (2) A broad understanding of the biophysical environment, both natural and man-made, and its role in contemporary society; (3) A fundamental understanding of the biophysical environmental problems confronting man, how these problems can be solved, and the responsibility of citizens and government to work toward their solution; (4) Attitudes of concern for the quality of the biophysical environment which will motivate citizens to participate in biophysical environmental problem-solving.

Students can choose an area of professional competence in (1) Environmental Social psychology to prepare them for conducting research about the social and psychological factors affecting our response to environmental conditions; (2) Instructional Programs to prepare them to integrate the philosophy of environmental education into instructional and curriculum innovations; (3) Environmental Communications to prepare specialists to effectively convey scientific information to the public concerning environmental matters, as well as conveying public sentiments about environmental matters to decision-making structures and; (4) Planned Change to prepare an environmental change agent who will be able to move into a foundation, organization, or community group with the skills which are necessary to motivate a given system whereby its members will effectively identify and begin to resolve difficulties interior and exterior to the system.

Western Michigan University

Dr. Robert W. Kaufman
Department of Political Science
Institute for Public Affairs
Western Michigan University
Kalamazoo, Michigan 49001

Environmental Studies (B.A.) starting in the Fall of 1971

Currently we are considering proposals for undergraduate major and minor programs in environmental studies. We anticipate such work would be taken concurrently with a disciplinary major in all undergraduate colleges.

Northern Michigan University

Dr. Henry Heimonen, Head
Department of Geography, Earth Science, and Conservation
West Science Building
Northern Michigan University
Marquette, Michigan 49855

Minor in Conservation or Conservation Education

Pre-Forestry, Pre-Conservation or Resource Education (two-year curriculums)

Proposed for 1972, major in Biology - Environmental Science and a major in Geography - Resource Planning

Northern Michigan University offers a minor in Conservation. Courses include Conservation of Natural Resources, Soils, Dendrology, Wood Technology, Woodland Management, and Recreation Conservation. The program is further enhanced with courses from our Biology and Geography Departments; namely, Ecology and Man, Wildlife Management, and Physical Geography as well as others which are just being developed.

Graduates taking a major in Biology or Geography with a Conservation minor can qualify for Civil Service exams for Park Interpreters and Conservation Resource Planners. Some Geography-Conservation graduates take positions with city governments in city planning, etc.

Practical work is offered at our Cusion Lake Field Station during the summer sessions in both Conservation and Biology, with an environmental stress.

MINNESOTA

Bemidji State College

Dr. Robert A. Montebello
Department of Health, Safety, and Recreation
Bemidji, Minnesota 56601

Elementary Education (B.S.), with a concentration in Outdoor Education

Secondary Education (B.S.), with a minor in Outdoor Education

Three specific courses in Outdoor Education, eleven courses from areas of science and biology, seven courses from health, physical education, and recreation are combined in an inter-disciplinary appraoch to provide either the concentration or minor.

The program is primarily intended for the classroom teacher, especially in the elementary area. It provides a student with the background to develop outdoor education programs in school systems.

Mankato State College

Dr. Theodore L. Nydahl, Chairman
Environmental Studies Program Committee
School of Arts and Sciences
Mankato State College
Mankato, Minnesota 56001

Environmental Studies (B.S. or B.S. Teaching)–the double major concept, second major available in biology, chemistry, geography, recreation and park administration, or sociology

The double major concept is explained below:

(1) The student completes his Environmental Studies major and also a second major in a discipline or area under the guidance of an advisor from the second major area.

(2) The student determines which degree program he intends to pursue, selects one of the options, and receives the approval of his advisor for the courses he will take for completion of the double major.

(3) A second major (i.e. in combination with the broad Environmental Studies major) in the following areas: chemistry, geography, sociology, recreation and park administration, and Broad Major in Science–Biology emphasis.

(4) It is desirable, but not mandatory, that a second major be earned.

(5) The student's program of studies must be approved by the program coordinator.

(6) As the Environmental Studies Program develops, other disciplines may wish to seek approval for the double major status.

University of Minnesota

Dr. John R. Tester
Director of Graduate Studies
Department of Ecology and Behavioral Biology
University of Minnesota
Minneapolis, Minnesota 55455

Ecology (M.S., Ph.D.)

The Ecology Department offers the M.S. and Ph.D. degrees in ecology. Faculty participating in this program are drawn from the College of Biological Sciences, the Institute of Agriculture, and the Institute of Technology. Thus, the program can give the intending ecologist an unusual breadth of training and, at the same time, provide a high degree of specialization. For example, students may conduct graduate research in insect behavior, radio-telemetry, wetland ecology, algal ecology, paleontology, mineral cycling, etc.

Because of the great variety of pursuits in ecology and the increasing demand for environmental scientists of widely different backgrounds, required course work is minimal. Each candidate's program is planned to meet his individual requirements. Seminars and tutorials constitute an important part of all programs.

MISSOURI

Central Missouri State College

Dr. Oscar Hawksley
Department of Biology
Central Missouri State College
Warrensburg, Missouri 64093

Biology (B.A., B.S.), with a specialization in conservation

Students graduating from C.M.S.C. with a major in biology may enter the fields of wildlife biology or forestry (including conservation or environmental education). Many positions require advanced study through the master's degree. Therefore, the serious student should plan to follow a program leading to the Bachelor of Science or Bachelor of Arts degree which will also prepare him for graduate study.

Northeast Missouri State College

Dean A. Rosebery, Head
Science Division
Northeast Missouri State College
Kirksville, Missouri 63501

Environmental Science (B.S. in Ed.)

The Division of Science and the Division of Social Science are cooperating in presenting a curriculum in Environmental Science. This curriculum is for the student who desires to become accredited to teach earth science and geography at the secondary level. The program is designed with enough elective hours so that the student may become more knowledgeable in both earth science and geography or specialize in either area. There are also enough unrestricted electives so that students may take cognate courses which would reinforce an environmental science major; these courses could be from the fields of study such as social science, biological science, and physical science.

MISSISSIPPI

University of Southern Mississippi

Dr. John M. King
Department of Recreation
University of Southern Mississippi
Hattiesburg, Mississippi 39401

Recreation (B.S., M.S.), with an emphasis in Outdoor Education

MONTANA

University of Montana

Dr. Roy C. White
School of Education
University of Montana
Missoula, Montana 59801

Master's Degree in Education (M.A.), Environmental Education concentration

Environmental Education Curriculum (Ed.D.)

Because of the flexibility in programming, the student working toward the M.A. Degree in Education can take up to 39 credits in Environmental Sciences from the 54 credits required to graduate. The student enrolled in the doctoral program will include the following in his program: (1) a primary area of study which can be in environmental education curriculum, (2) a supporting area which can be among either elementary education or secondary education with an emphasis in Environmental Education, (3) Certain foundation areas of work, (4) a research area, and (5) certain non-education courses related to the area.

University of Montana

The Dean
School of Forestry
University of Montana
Missoula, Montana 59801

Resource Conservation (B.S., M.S.)

Under the Bachelor and Master of Science in Resource Conservation, students are able to develop programs which fit their career interests in specialized conservation and resource management fields. A personalized curriculum is constructed by the student and his advisor.

Programs dealing with conservation education, conservation journalism, conservation information programming and environmental interpretation are acceptable under these degrees. Several students are currently enrolled in such programs.

Completion of a B.S. or M.S. in Resource Conservation with a specialization in Conservation Education or Environmental Interpretation may qualify the student for a career as a Conservation Education specialist, Information specialist, Park Naturalist, or Conservation Extension Specialist.

University of Montana

W. Leslie Pengelly, Coordinator
Environmental Studies Program
School of Forestry
University of Montana
Missoula, Montana 59801

Environmental Studies (M.S., M.A.)

The program is different in many respects from the usual graduate program of studies. One of the program's objectives is to improve the quality of man's life by providing a sensitive, innovative approach to environmental problems. Such an approach offers special advantages to participants, but also makes special demands upon them. Students should expect to learn by doing. They should expect to be actively involved in environmental issues, whether on local, state, or national levels. Their role in the program should be both as environmental activist and as environmental theoretician.

An Environmental Studies Core Curriculum forms the basis for the program's course-work, and is required of majors. Additional courses are selected by the student, with the guidance of a faculty committee, pursuant to his interests and undergraduate background. Approximately 65 courses are available from nearly every department on campus which are to varying degrees environment-related, and range in orientation from technical/ biophysical to theoretical/humanistic.

NEBRASKA

Chadron State College

Mack Peyton
Department of Health, Physical Education, and Recreation
Chadron State College
Chadron, Nebraska 69337

Recreation (B.A.), with an emphasis in Outdoor Education

The emphasis in outdoor education is to acquaint the student with knowledge and skills for teaching in the out-of-doors, through direct experience, to develop a common understanding of the means available for education in and for the out-of-doors, and to learn of agencies, facilities, and resources available for the promotion of outdoor education.

University of Nebraska

Donald F. Burzlaff
College of Agriculture
Room 234
Keim Hall
University of Nebraska
Lincoln, Nebraska 68503

Natural Resources (B.S.), with an option in soil conservation and survey, range management, recreational resources management, and water resources management

The Natural Resource Area was developed by the University of Nebraska College of Agriculture to provide Nebraska students an opportunity to study and appreciate the structure, function, and wise utilization (conservation) of these resources.

Five options are available within the Natural Resources Area which permit specialization by the student in one or more areas of resource management. These options include:

(1) Soil Conservation and Survey: Complete understanding of our environment involves a knowledge of the nature and properties of soil. This option combines physical and biological sciences with the nature and properties of soil. This option combines physical and biological sciences with social and agricultural science into an effective and challenging program. Graduates of this option will qualify for the position of soil conservationist or soil scientist under Civil Service requirements.

(2) Recreational Resources Management: Development and administration of areas for recreation and scenic value demand special skills. The recreation option combines social, biological, and physical sciences with architecture and agricultural courses to meet these needs. The graduates of this option will find positions in federal, state, and local agencies that are responsible for development and administration of parks, roadside areas, and other public facilities.

(3) Range Management: This involves the science and technology of managing our grasslands to an end of maximum sustained benefit for society. Plant and animal sciences, soil science, physical and social sciences are arranged to provide a broad basis for decision making. Graduates will qualify for Civil Service positions of Range Conservationists with state and federal agencies.

(4) Water Resources Management: Management, development and utilization of our water resources are vital in today's society. This option will prepare students for careers concerned with use, management, and conservation of our valuable and extensive water resources. Courses studied include biological and physical sciences, engineering, soils, water quality and agricultural production. These are combined with socio-economic areas involving land use, political science and rural-urban relationships.

University of Nebraska at Omaha

Ernie Gorr
Department of Health, Physical Education, and Recreation
University of Nebraska at Omaha
Omaha, Nebraska 68101

Recreation (B.S.), with an emphasis in Outdoor Education

The Recreation Education Program provides opportunity for leadership preparation through theory and practical application. One of the program's areas of emphasis is Outdoor Education. The student electing this area of emphasis will have in addition to Recreation courses, 21 hours in selected courses within the Department of Biology. Cooperative practical experience is obtained from the Fontenelle Forest Nature Center.

NEVADA

University of Nevada

C. M. Skau, Chairman
Renewable Natural Resources Division
College of Agriculture
University of Nevada
Reno, Nevada 89507

Renewable Natural Resources (B.S.), with options in Forestry, Game Management, Range Science, Recreation Area Management, Watershed Management, Conservation

The Renewable Natural Resources major offers a program which balances a sound background in basic disciplines, flexibility in choice of specialized education, and emphasis on developing analytical skills necessary for the many positions available in renewable natural resource management.

Each option corresponds to recognized professions, and each offers a distinct curriculum that meets appropriate professional and civil service requirements. The options include:

(1) Forestry–The core of professional forestry courses is oriented at management of forest lands. Students preparing for this curriculum are urged to acquire a substantial background in mathematics and science. As part of the curriculum, they are required either to attend an eight-week summer camp at Flagstaff, Arizona, or show evidence of having acquired equivalent experience through summer employment in forest-related jobs. Permanent employment

opportunities are found with industrial and consulting firms or state and federal agencies, such as Nevada Division of Forestry, United States Forest Service, Bureau of Land Management, and National Park Service.

(2) Game Management–This curriculum stresses management aspects of game species based on ecological principles. Emphasis is given to habitat improvement, game management in relation to hunting, habitat requirements and game farming and the role of game multiple-use management of forest, range, and agricultural areas. It prepares students for careers in private or public agencies as managers or administrators.

(3) Range Management–The curriculum provides a wide base for management of natural forage resources upon which livestock and big game depend for food and cover. Range science courses provide specialization in range plants and ecology, range evaluation methods, and range management principles and practices. Related courses such as soils, animal science, forestry and wildlife management are required. Students are encouraged to seek summer employment with one of the resource agencies. Employment opportunities are found in a variety of state and federal agencies and range management or agribusiness.

(4) Recreation Area Management–The core of professional courses is oriented at developing an artistic sensitivity toward the quality of experience in the exterior environment. Analytic skills and a methodology into the design process is developed through real site problems. Design approach can be tested in both urban and regional landscapes in the context of open space system. Emphasis is placed on the diversity of policymaking decisions and their impact on land form. Permanent employment opportunities are found with public and private agencies.

(5) Watershed Management–This curriculum prepares the students for management of water yield from upland areas through cultural practices on plants and soils and use of small structures. Students entering this program are advised to obtain four years of high school mathematics and science. Permanent employment opportunities are found with consulting industrial firms and state and federal land management agencies. Numerous opportunities also exist in research and teaching for those with advanced degrees.

(6) Conservation–This will allow the student to gain teaching credentials with combined work in the College of Education.

University of Nevada

Department of Elementary Education
College of Education
University of Nevada
Reno, Nevada 89507

Elementary Education (B.S.), area of concentration in Environmental Science

University of Nevada

Dr. John Treut
Department of Secondary Education
College of Education
University of Nevada
Reno, Nevada 89507

Secondary Education (B.S.), with a teaching Minor in Environmental Science

NEW HAMPSHIRE

Dartmouth College

George Macinko
Department of Geography
Dartmouth College
Hanover, New Hampshire 03755

Proposed: An Environmental Studies Program

A series of integrated courses designed to provide students in all fields with a broad perspective of man's place in the natural world, and of his dependence on the physics, chemistry, and biology of planet Earth.

NEW JERSEY

Glassboro State College

Dr. Thomas J. Rillo
Professor of Outdoor Education
Glassboro State College
Glassboro, New Jersey 08028

Environmental Education (M.A.)

The environmental education master's degree program at Glassboro State College is designed to prepare personnel to fill leadership roles in these fields.

A reawakened public conscience about the wise use and proper management of all natural resources, throughout the nation, has focused on the need for teachers to be able to use the outdoors as a potent tool in developing attitudes and knowledges concerning the use of natural resources.

Educators enrolled in the program will be provided with course work and training necessary to gain a depth of knowledge and skills in Environmental Education. They will be prepared to make full use of the potentials in the outdoor laboratory.

Teachers trained to develop outdoor activities and expanded learnings in conservation, will effect curriculum enrichment in their schools. Intensity of learning and social development have characterized many of the programs thus far.

These vital problems are some of the concerns of this master's program which is designed to meet the needs of outdoor leaders for youth and adults of all ages.

Montclair State College

Dr. Edward J. Ambry
Associate Dean–Graduate Studies
Montclair State College
Upper Montclair, New Jersey 07043

Environmental Eduation (M.A.)

The program provides basic courses in Environmental Education and allows students to select related courses in several departments. By cutting across departmental lines, individual programs may be designed for students which will strengthen their academic background and also allow them to be introduced to new fields of study which will relate to their plans to conduct education programs in outdoor situations.

This program is designed to prepare school personnel for leadership roles in Environmental Education. This program will provide course work and skills necessary for curriculum enrichment and will prepare teachers as specialists in the field.

Rutgers University

Director of Resident Instruction
College of Agriculture and Environmental Science
Rutgers University
New Brunswick, New Jersey 08903

Environmental Science Education (B.S.)

The Environmental Science Teacher Education program is an option of the environmental science core curriculum. Completion of the program leads to a Bachelor of Science degree. The program prepares graduates for certification in the areas of Vocational - Technical Agriculture and Science Education. Certification in the area of science includes the biological, physical, general, and earth science teaching areas. Graduates are prepared to accept positions as environmental education coordinators in school systems, state and federal parks and forests and as science teachers in vocational and secondary schools. The program includes 21 credits in professional education. Six of the 21 credits are gained through student teaching in an established department in a secondary school. The remaining 15 credits in professional education comply with the certification requirements of most state departments of education and include work in Educational Psychology, Foundations of Education, Principles and Practices in Education, Methods of Teaching Vocational - Technical Agriculture, and Methods of Teaching Science. Graduates of the program are now successfully teaching in a variety of capacities in several Northeastern states.

NEW MEXICO

University of New Mexico

D. Warder
Department of Recreation
University of New Mexico
Albuquerque, New Mexico 87107

Recreation (B.A., M.S., Ph.D.), with an option in Outdoor Education and Natural Resources Management

The Natural Resources Management option is designed to prepare an emphasis on management of recreational areas and facilities of local, state, and federal levels.

NEW YORK

Briarcliff College

Walter Chinzinsky
Briarcliff College
Briarcliff Manor, New York 10510

Biology, with an emphasis on Environmental Science

The City University of New York

Chairman
Department of Biology
The City University of New York
New York, New York 10031

Biology (M.S., Ph.D.), with a program in Ecology

Columbia University

Professor Andrew Vayda
Department of Anthropology
Columbia University
Broadway and W. 116 St.
New York, New York 10031

Ecological Anthropology (A five-year program leading to a Ph.D.)

Community College of the Finger Lakes

Director
Natural Resource Conservation Program
Community College of the Finger Lakes
Canadaigua, New York 14424

Natural Resource Conservation (A.A.S.)

The purpose of the Natural Resource Conservation Curriculum leading to an Associate in Applied Science is to prepare students for careers in conservation and/or outdoor recreation. Such career areas encompass a variety of paraprofessional employment opportunities, i.e. Conservation-Recreation Technicians, Wildlife and Fishery Technicians, Rangers, Conservation Law Enforcement Officers, Environmentalists, etc.

It is also the purpose of this program to establish a suitable transfer program for those contemplating continuing at a four-year institution in a related degree area. A second sub-purpose relates to the establishment of a community-interest program in conservation-recreation. This will include such programs as seminars, conferences, in-service training programs and workshop, and home study courses.

The educational experiences in the career area will combine classroom theory, laboratory instruction, and field practice. Heavy emphasis will be placed on courses in the Biological Sciences. Although conservation courses will emphasize scientific materials, a good deal of additional time will be spent on humanistic approaches to social and scientific environmental problems. Sensitivity training will be stressed in all areas where people and natural elements of the environment are considered. Extensive field work and practicum experiences will be developed and will specifically relate to the individual's career interests.

Cornell University

Chairman
Department of Conservation
Cornell University
Ithaca, New York 14850

Conservation (M.S., M.A., Ph.D.)

Major and minor subjects include: Aquatic Science, Fishery Science, Forest Conservation (minor subject only), Natural Resources Conservation, and Wildlife Science.

To undertake study in this field the student should be well prepared in biological sciences. A strong background in the physical sciences is highly desirable, and a working knowledge of statistical methods is important. To major in natural resources conservation, the student should come with training in some scientific discipline which he proposes to use in an integrative way to focus on natural resource problems, and he should preferably have professional job experience.

Cornell University

Chairman
Department of Ecology and Evolutionary Biology
Cornell University
Ithaca, New York 14850

Ecology and Evolutionary Biology (M.S., M.A., Ph.D.)

Major and minor subjects include: Aquatic Ecology (including limnology, marine ecology and oceanography), Community and Ecosystem Ecology, Environmental Physiology, Evolutionary Biology, General Ecology, Paleontology, Parasitology, Population Ecology, Terrestrial

Ecology, and Vertebrate Zoology (including herpetology, ichthyology, mammalogy, and ornithology).

Cornell University

Dr. Richard B. Fischer, Professor
Environmental Education
Division of Conservation Education
Department of Education
Stone Hall
Cornell University
Ithaca, New York 14850

Environmental Education (B.S., B.A., M.S., M.A.T., Ph.D.)

Cornell University's history of training and leadership in the twin fields of environmental interpretation and conservation education began three quarters of a century ago. The large number of graduates who are leaders in environmental education is ample proof of Cornell's contribution to the field. A tradition of scholarship, research and direct field experiences was established by noted ecologist and conservationists such as Liberty Hyde Bailey, E. Laurence Palmer, A. H. Wright, Arthur A. Allen, John Henry Comstock, and William J. Hamilton. This Cornell tradition remains strong in an era when it is critically important to know living organisms in their natural habitats and to understand man's influence on them.

The aim of the program is to train a student who will be strong in the subject matter of biology, ecology, conservation, and who will possess the communication skills necessary for a successful career. In the undergraduate program students will take approximately 50 hours in basic sciences; this background will be supported by courses in education and communications skills such as lecturing, writing, illustrating and exhibit designing. Students are thereby prepared for professional careers in environmental interpretation, and nature center work, museum education programs, outdoor education, state and private conservation organizations, Audubon societies, professional scouting, and publications dealing with natural history, conservation, and environmental education.

Great flexibility has always been a hallmark of career preparation at Cornell. Harmonious working relationships with professors of botany, conservation, entomology, vertebrate zoology, and ecology have enabled the Department of Education to design training programs for undergraduate and graduate students. These capitalize on individual interests, build on personal strengths, and equip students for specific phases of environmental education. The Division of Conservation Education of the Department of Education is small enough to foster close, friendly relationships between students and staff, yet large enough to offer numerous opportunities for students to participate in many programs.

In pursuing graduate study in this field at Cornell University, the student is able to design a degree program which will strengthen his skills in subject matter and communication. Additional course work in the biological fields, with supporting courses in writing and illustrating are normally part of the degree program. There are no prescribed curricula for the graduate student; rather he works with a Graduate Faculty Committee in designing a program tailored to his previous preparation and career goals.

Cornell University

Chairman
Department of Natural Resources
College of Agriculture
Fernow Hall
Cornell University
Ithaca, New York 14850

Natural Resources (B.S.), programs in (1) wildlife science, (2) fishery science, (3) forestry science, (4) outdoor recreation, and (5) environmental conservation

Natural Resources (M.S.), major subjects in (1) fishery biology, (2) wildlife science, (3) natural resources conservation; and as a minor subject forest conservation and water resources

Students may elect one of five programs. The three science programs give preparation for graduate work, but they may be modified for students who wish to terminate their study at the bachelor's level and go directly into a professional management career. The curriculum in Outdoor Recreation is intended for managers or planners of land and water devoted primarily to recreational uses. The program in environmental conservation is a general educational program designed to prepare citizens to understand their biophysical environment and man's impact on it. It blends the biological, physical, social sciences, and humanities so that a sound base is provided for the pursuit of graduate studies in many areas having to do with man's management of his environment.

Other areas of study in the natural resources field include programs in soil and water conservation in the Department of Agronomy, conservation education in the Department of Education, and resource economics in the Department of Agricultural Economics.

New York University

Dr. Edith L. Ball, Director
Recreation and Camping Education Area
Division of H. P. E. and R.
Room 675, Education Building
New York University
Washington Square, New York 10003

Camping Education (M.A., Sixth-Year Certificate, Ph.D., Ed.D.) with a specialization in outdoor education and environmental education

The Camping and Outdoor Education curriculum is designed to prepare people for the administration of resident and day camps. An option within this curriculum makes it possible for the student to specialize in the field of outdoor education and environmental education. Besides the requirements of content courses in the field of camping, the curriculum include courses in research, counseling, group dynamics and psychology. Independent student in camp leadership, performed while the student is on the job in a summer camp is an optional course.

State University of New York at Albany

Eugene McLaren, Coordinator
Environmental Studies Program
State University of New York at Albany
Albany, New York 12200

Environmental Studies

State University College at Buffalo

George M. Laug
Department of Biology
State University College at Buffalo
1300 Elmwood Avenue
Buffalo, New York 14222

Biology (M.A.), strong emphasis in environmental biology

State University College of Forestry

Professor Russell Getty, Chairman
Forest Resources Management
State University College of Forestry
Syracuse, New York 13210

Forest Resources Management (M.S.), with complete latitude to design a program in Conservation Education

State University of New York at Cortland

Marcia K. Carlson, Associate Professor
Department of Recreation Education
SUNY College at Cortland
Cortland, New York 13045

Nature Recreation and Interpretation (B.S.E.)

Recreation Education (B.S.E., M.S. Ed.), specialization in outdoor education and camping

This degree program is a joint offering with the Biology Department.

Queens College

Dr. John Loret, Director
Environmental Studies
Queens College
Flushing, New York 11367

The University is planning to develop an undergraduate degree in the area of Environmental Studies in the near future. We also presently have before the Graduate Committee a proposal for a Master of Science Degree in Environmental Studies, which we hope will be approved by September 1971.

NORTH CAROLINA

North Carolina State University at Raleigh

Dr. LeRoy C. Saylor, Assistant Dean
School of Forest Resources
North Carolina State University at Raleigh
Raleigh, North Carolina 27600

Conservation (B.S.)

Natural Resources Recreation Management (B.S.)

The curriculum in Conservation prepares young people for careers in managing the broad spectrum of renewable natural resources. Urbanization and expanding population are bringing increased pressure on natural resources and accelerating the need for broadly educated individuals able to make sound judgments in planning and managing these resources.

The Conservation Curriculum is offered jointly by the School of Forest Resources and the School of Agriculture and the Life Sciences. The student enrolls in one of these schools depending upon his particular objectives and desires. For many students the Conservation degree will be the only degree desired. Other students, who wish a strong background in conservation, could meet their basic degree requirements in fields such as Forestry, Recreation, Wildlife Science, Soils, Botany, Zoology, or Liberal Arts, and at the same time meet the requirements for a secondary Bachelor's degree in Conservation.

The curriculum in Natural Resources Recreation Management has its principle focus toward the types of recreation which intimately involve the wildland resource as an indispensable component of the recreation opportunity or experience. It should be of particular interest to the student who aspires to a career with organizations, institutions, agencies, or corporations concerned with the preservation, wise use and improvement of recreation opportunities as they occur in the wildlife environment. Students will be prepared to serve with public or private agencies primarily concerned with the more extensive phase of public outdoor recreation as they occur on extensive parklands and on other non-urban lands managed for the optimum output of diversified recreation benefits. Growing pressure on the diminishing wildland resource is placing a premium on managers who can recognize opportunities, identify problems, conceptualize solutions, and implement policies in these fields.

Wake Forest University

Dr. Ralph D. Amen, Chairman
Department of Biology
Wake Forest University
Winston-Salem, North Carolina 27109

Biology (M.A.), research opportunity in Physiological Ecology and Population Ecology

Biology (Ph.D.), research opportunity in Physiological Ecology

NORTH DAKOTA

OHIO

Antioch College

Dr. Robert Bieri, Chairman
Environmental Studies Center
Antioch College
Yellow Springs, Ohio 45387

Environmental Studies (B.S., B.A.)

The center offers an undergraduate degree in Environmental Studies. Each program of study is individually designed for the educational and vocational goals of the student majoring in environmental studies. At least two faculty members representing two different academic disciplines advise each major. In many cases, students interested in environmental studies are encouraged to major in a traditional discipline within the College if this seems to be the best course of study related to the goals of the student. Almost any discipline may be related to the environment and some of those followed by students in recent years have been biology, education, chemistry, engineering, geology, geography, art, political science, and sociology.

In addition to formal courses, Antioch students have many opportunities to directly experience and study diverse environments throughout the United States through the College's work program and in foreign countries through the Education Abroad Program. In past years, students have carried out environmental studies in Africa, Mexico, England, Switzerland, Spain, and other countries. Through the Antioch Field Center in Philadelphia students can become intimately involved in urban studies.

Kent State University

Glenna Williams
Department of Recreation
School of H. P. E. and R.
Kent State University
Kent, Ohio 44241

Recreational Leadership (B.A.), with a concentration in interpretive ecology

Miami University

Dr. Gary W. Barrett
Miami University
Oxford, Ohio 45056

Environmental Science (M.S.)

Ohio State University

Dr. Charles L. Mand
School of H. P. E. and R.
337 West 17th Avenue
Ohio State University
Columbus, Ohio 43210

Recreation and Outdoor Education (B.S. in Ed.)

Ohio State University

Dr. Carl S. Johnson
School of Natural Resources
245 Lord Hall
124 West 17th Avenue
Ohio State University
Columbus, Ohio 43210

Conservation and Outdoor Education (B.S. in Agriculture)

Double degree in Conservation and Outdoor Education with education (B.S. in Agriculture and B.S. in Ed.)

Conservation or Outdoor Education or Environmental Education (M.S. in Natural Resources)

Interpretive Work (B.S. in Agriculture)

OKLAHOMA

University of Oklahoma

Dean
School of Civil Engineering and Environmental Science
University of Oklahoma
Norman, Oklahoma 73069

Master of Environmental Science Degree

The Master of Environmental Science degree is designed for students interested in general professional education in the area of public and environmental health. Within three weeks after admission to graduate work, the student must consult the Coordinator, who will appoint a committee of three or more faculty members to direct the students program. The committee will develop an individual program most suited to the candidate's needs.

The Master of Environmental Science degree requires at least one graduate level course from each of the following areas: for Engineers, public health, administration, environmental sanitation, engineering investigational procedures, epidemiology, sanitary chemistry, unit operations, sanitary biology and sanitary design and water resources. For non-Engineers, public health administration, epidemiology, sanitary chemistry, sanitary biology, vital statistics, environmental sanitation, and radiation. Optional courses, bringing the total hours to thirty (or thirty-two if the no-thesis plan is followed), are to be taken from Sanitary Science and Public Health and related fields with the consent of the student's advisory committee.

OREGON

Oregon State University

Dr. Edward H. Heath, Head
Department of Leisure Science and Environmental Resources
346 Waldo Hall
Oregon State University
Corvallis, Oregon 97331

Education (B.S., M.Ed.), proposed areas of emphasis include Environmental Ecological Education; Outdoor Recreation: Option A – Recreation Resource Development, Option B – Environmental Interpretation, Park Administration.

University of Oregon

Chairman
Department of Recreation and Park Administration
University of Oregon
Eugene, Oregon 97401

Recreation and Park Administration (B.A., B.S., M.A., M.S.), with an emphasis in outdoor education

The emphasis in outdoor education is designed to prepare students for careers in school oriented positions and is designed to enable the student to complete the College of Education requirements for teacher certification, as an essential part of this emphasis.

Southern Oregon College

Dr. Ronald Lamb
Director of Outdoor Education
Southern Oregon College
Ashland, Oregon 97520

General Studies--Outdoor Education (M.S.)

The primary objectives of this new, interdisciplinary program are (1) to devleop leaders in Conservation and Outdoor Education with a broad background in the sciences and the social sciences who have an understanding of the inter-relationships of the ecological and economic aspects of conservation and (2) to develop personnel competent in the use of techniques and experiences suitable for teaching in the out-of-doors.

The cascade Field Center, the site of much of the classwork for the courses is located near the summit of the Cascade Mountains in Southern Oregon. Through the wide range of natural areas available, teachers may gain experience in the use of outdoor laboratories in teaching mathematics, science, geography, history, the language arts and the fine arts.

Competencies expected of graduates of this program include (1) Understanding of the inter-relationship of man and his natural and man-made environments; (2) Understanding of the basic principles and information about natural resources and resource management problems; (3) Ability to identify those aspects of the existing curriculum that can best be taught out-of-doors; (4) Ability to plan and implement meaningful outdoor experiences in their own schools; (5) Ability to use the methods, tools, skills, and techniques of the naturalist, the scientist, and the outdoorsman in enriching and extending the existing curriculum; and (6) Ability to integrate and coordinate outdoor experience into ongoing school programs.

PENNSYLVANIA

California State College

Dr. Wm. LeRoy Black, Head
Conservation and Recreation
California State College
California, Pennsylvania 15417

Conservation and Environmental Science (B.A.)

Education (B. Ed.), emphasis in Conservation and Environmental Science

The Division of Conservation and Environmental Education is studied through the Natural Sciences Area of Concentration.

This program concentrates on the competencies needed for planning and administering conservation and environmental science programs.

Students may qualify for positions as park and interpretive naturalists, conservation and environmental science resource specialists, outdoor education specialists and coordinators, or administrative positions in conservation, environmental science and outdoor recreation, at the various levels of government, in addition to private and quasi-public agencies.

Attendance during one summer trimester is required.

Cedar Crest College

Robert A. Scott
Department of Biology
Cedar Crest College
Allentown, Pennsylvania 18100

Interdisciplinary curriculum in environmental sciences. Emphasis on studies of pollutants and their control; concern for public information.

Drexel Institute of Technology

Program Director
Environmental Science
Drexel Institute of Technology
32nd and Chestnut Streets
Philadelphia, Pennsylvania 19104

Environmental Science (M.S., Ph.D.)

The reality of man's ability to modify his own environment offers one of the most exciting challenges of this era. The program of graduate study at Drexel is designed to prepare scientists to participate in this creative work–in industry, government, research and consultation.

Areas of concentration which the student selects upon entrance are offered in Environmental Management, Air Resources, Industrial Hygiene, Radiological Health, Water Resources, and Solid Wastes.

Millersville State College

Mr. John L. Horst
Roddy Science Center
Millersville State College
Millersville, Pennsylvania 17551

Proposed–program which would meet state requirement for endorsement in Environmental Education

The Pennsylvania State University

Undergraduate:
Dr. Fred Coombs
Recreation and Parks Program
259 Recreation Building
The Pennsylvania State University
University Park, Pennsylvania 16802

Graduate:
Dr. Betty Van Der Smissen
Recreation and Parks Program
275 Recreation Building
The Pennsylvania State University
University Park, Pennsylvania 16802

Recreation and Parks (B.S., M.S., M.Ed.), option in Camping, Outdoor Education, and Outdoor Interpretive Services

Physical Education - Recreation specialization (Ph.D., D.Ed.) with an area of specialization in Camping, Outdoor Education, and Outdoor Interpretive Services

Camping, Outdoor Education, and Outdoor Interpretive Services focuses upon the administration of resident camp programs, school-oriented outdoor education, including resident outdoor schools and the integration and utilization of the natural environment into the curriculum; and public interpretive programs, especially the nature center complex in its whole program, coordinator of community outdoor education programs, and development of overall outdoor recreation programs under various auspices.

The Department of Education, Commonwealth of Pennsylvania, has authorized an endorsement and a specialist certificate in conservation–outdoor education. The College of Education and the Recreation and Parks Program at Penn State is in the process of securing approval for programs which will result in endorsement and certification.

Slippery Rock State College

Dr. Craig Chase, Director
Environmental Education Program
Slippery Rock State College
Slippery Rock, Pennsylvania 16057

Environmental (Conservation-Outdoor) Education (M.Ed.)

Environmental Education (B.A.) - Proposed

The proposed undergraduate program in environmental education, to be offered through the Recreation Department is specifically designed for elementary and secondary education students. Elementary education students may select environmental education as a cognate area. Students preparing to teach on the secondary level may secure certificate endorsement in environmental education. All courses within the program will be available on an elective basis to any qualified student.

The department operates the 300-acre Jennings Nature Reserve as the focal facility of its environmental education studies. This facility in addition to the 30-acre Miller tract on Wolf Creek, the 13,000-acre Moraine State Park, and other nearby outdoor resource areas provide ample opportunities for research and academic study.

RHODE ISLAND

University of Rhode Island

Dr. John Kupa
College of Resource Development
University of Rhode Island
Kingston, Rhode Island 02881

Natural Resources (B.A., M.S.)

SOUTH CAROLINA

Clemson University

Department of Recreation and Park Administration
Clemson University
Clemson, South Carolina 29631

Recreation and Park Administration (B.S.)

Presently working on an option in Outdoor Interpretation

SOUTH DAKOTA

TENNESSEE

University of Tennessee

The Director
Graduate Program in Ecology
University of Tennessee
408 10th Street
Knoxville, Tennessee 37916

Graduate Program in Ecology (M.S., Ph.D.)

The Graduate Program in Ecology offers ways to earn the Master of Science with a major in ecology and the Doctor of Philosophy with a major in ecology. The requirements of these degrees have been planned to effect both a sound foundation in ecology and adequate specialization for research in this field. The departments cooperating in this program are Agricultural Biology, Agronomy, Forestry, Horticulture in the College of Agriculture; and Botany, Zoology, and Entomology in the College of Liberal Arts. The Radiation Ecology Section of the Oak Ridge National Laboratory participates with training and research opportunities in radiation ecology and related subjects, as does the Tennessee Valley Authority in aquatic biology.

TEXAS

Lamar State College of Technology

Dr. Edwin S. Hayes, Dean
School of Sciences
Lamar State College of Technology
Beaumont, Texas 77700

Environmental Science (B.S.)

Completion of this program will qualify graduates for governmental and industrial positions concerned with the prevention, detection, and abatement of pollution detrimental to the quality of the environment. Interdisciplinary by design, the curriculum affords latitude in the selection of electives, thus providing for the enhancement of competence in fields of primary interest.

Texas A & M University

Dr. Leslie M. Reid, Head
Department of Recreation and Parks
Texas A & M University
College Station, Texas 77843

Recreation and Parks (B.S.), Environmental Interpretation, option

Recreation and Resources Development (M.A., M.S.), emphasis on Environmental Interpretation

Natural Resources Development (Master of Agriculture, Ph.D.), emphasis on Environmental Interpretation

An environmental interpretation option is for those individuals who will be most closely engaged in contact with visitors to parks and recreation developments. It is designed to assist the student in acquiring those skills needed to communicate to the public the values associated with the natural environment. Emphasis is on the philosophy and methodology of effectively communicating the natural and cultural environment of man.

UTAH

University of Utah

Chairman
Department of Biology
University of Utah
Salt Lake City, Utah 84112

Biology (M.A., M.S., Ph.D.), with an area of specialization in Environmental Biology

VERMONT

University of Vermont

Dr. Gerald Donovan
Recreation Resource Management Curriculum
Morrill Hall
University of Vermont
Burlington, Vermont 05401

Natural Resource Management (B.S., M.S., in Agriculture)

The number of people spending their leisure time outdoors has soared during the past ten years, creating a serious shortage of parks, campgrounds, and other outdoor recreation areas. But as areas are developed for recreation use, many more qualified people are needed to plan, develop, and manage these recreation facilities.

If you like to work outdoors, enjoy recreation activities, and want to preserve our natural resources, then Recreation Resource Management may be just the career you are looking for.

Many jobs await you in planning and developing private land, forests, parks, and resorts for recreation facilities. As a graduate in Recreation Resource Management, your special knowledge and talents are needed at local, regional, and state levels to work with government agencies and private associations.

Recognizing the ever-increasing demand for qualified personnel, the College of Agriculture and Home Economics at the University of Vermont designed a course of study for young people seeking careers in these areas. The Recreation Resource Management curriculum is practical. It encourages specialization, and it gives you--the student--considerable freedom to develop your program.

There are two major areas of study:

Recreation Resource Management will train you to set up and manage recreation businesses, such as parks, forests, hotels, resorts, ski developments, campgrounds, country clubs, and private lands. You may specialize in business administration or physical plant management.

Recreation Resource Planning will train you in large-scale environmental planning for careers in public and private development, landscape architecture, conservation, and state, regional, and community land use.

VIRGINIA

Virginia Polytechnic Institute and State University

Dr. John F. Hosner, Director
Division of Forestry and Wildlife Sciences
Virginia Polytechnic Institute and State University
Blacksburg, Virginia 24061

Forestry and Related Renewable Natural Resources (B.S.), specialization in Environmental Conservation.

Undergraduate programs offered by the Division of Forestry and

Wildlife Sciences are designed to provide the basic education for students interested in professional careers in the management and conservation of the forest environment. The overall goal of the Division is to prepare the student to be a manager of our renewable natural resources.

The environmental conservation program provides a general background in the physical, social, and biological sciences emphasizing application to natural resource management. Specialization is taken in the student's area of interest. Emphasis is placed on the application of environmental conservation to natural resource management.

WASHINGTON

Huxley College

Huxley College of Environmental Studies
Western Washington State College
Bellingham, Washington 98225

Environmental Studies (B.S.), concentration in Ecological Systems Analysis, Environmental Control, Environmental Planning, Hunger, Food, and Malnutrition, Marine Resources, Population Dynamics, Environmental Education (proposed).

Proposed: graduate program in Environmental Studies

As a cluster college, Huxley operates under the jurisdiction of the Board of Trustees and the President of Western Washington State College. As presently constituted, Huxley is a two-year, upper division college offering an interdisciplinary concentration in Environmental Studies. Students normally enter as juniors. Freshmen and sophomores are encouraged to prepare themselves for admittance to Huxley by incorporating natural sciences and other tool subjects into their lower division work. Advisement and coordination of the programs of potential Huxley students will be provided by Huxley staff in cooperation with community colleges and other institutions of higher learning.

Understanding man's ecological relations demands study in many disciplines. Huxley College, consequently, offers multidisciplinary study encompassing all of the physical, biological, and social dimensions of environmental problems. The contemporary demand for educational relevance requires that Huxley graduates understand not only the workings of our environment but also ways in which environmental order may be maintained. Problem oriented study is stressed at Huxley and concepts from the classroom are applied to specific situations.

Huxley's curriculum is based upon general areas of study called concentrations. A concentration focuses on a general problem area that may involve studies in a number of disciplines. The areas are broad enough to allow natural or social science programs within a single concentration. In addition to the concentration areas already available, Huxley students may develop individual academic programs to meet their particular needs and interests.

The concentrations are broad problem-oriented areas that allow students considerable flexibility in their academic programs. In addition to selecting a concentration (in general, not later than one quarter after entering and preferably at time of entry), students are encouraged to select an option in a specific discipline, such as biology or sociology. Students may develop their programs emphasizing natural or social sciences within a particular concentration. At present the following concentrations are available:

(1) Ecological Systems Analysis: For man to survive and manage the dynamic nature of ecosystems, he must be able to see and understand the unity in which various biotic and abiotic components of ecosystems interact. In particular, man must understand the dynamic flux of energy through ecosystems. He must gain knowledge of the processes which regulate the types and number of organisms within communities. Man's regulating and shaping ecosystems for agriculture, industry, and settlement involves the use of pesticides, weather modification, cultivation, and other processes which stress the environment. These interventions, unless undertaken with an understanding of the dynamics of ecosystems, will prove disastrous and outweigh the benefits. Students in this concentration will gain a qualitative and quantitative understanding of ecosystems through the emphasis of relevant relationships, nature's optimizing of vital processes and the use of systems analysis.

(2) Environmental Control: In the Huxley curriculum Environmental Control refers to those technological activities which are available to modify man's impact on the environment.

Courses emphasize the preservation and enhancement of the environment by controlling the quality and quantity of domestic, industrial, and agricultural wastes. The modification of waste impact is viewed conceptually by understanding the principles and pragmatics of waste treatment, recycling, and by-product recovery. Courses are specifically oriented toward air, water, or solid waste disposal.

Although the curriculum is heavily weighted in developing and understanding of natural phenomena and its modification by the technological application of chemical, biological, and physical principles, it also emphasizes relevant social, governmental, and economic constraints which bear on the abatement of environmental destruction.

(3) Environmental Planning: All organisms, directly or indirectly, modify their environment. In Darwin's views the surviving organism is the one which achieves the best fit of itself and its environment. We must bear in mind that achieving this best fit may require the modification of individual and group habits as well as the physical milieu in which human endeavor takes place. Bringing the natural scientist's understanding of environmental systems to bear on problems of human organization is the role of the ecologically based planner.

The integration of natural and social systems in time and space is the goal of the environmental planner. In addition to understanding these systems, the planner must also understand the ways in which decisions are made and implemented by both groups and individuals. He must understand the tools and techniques of gathering, analyzing, and presenting information, and equally important, he must possess an aesthetic sense leading to harmony and unity in his surroundings.

(4) Hunger, Food, and Malnutrition: Adequate food is basic to man's survival. Methods for developing the full energy potential of our planet and understanding the nutritional chain in the ecosystem are necessary. There exists a lack of awareness as to the gravity, magnitude, and nature of the current world food crisis.

The concentration in Hunger, Food, and Malnutrition emphasizes the principles of food and nutrition. The problems associated with the food issue of the U.S. and the world, and the possible ways by which these problems may be solved, will be considered.

(5) Marine Resources: Although the oceans are not an infinitely large source of food for man's increasing population, they do provide an important protein source that is presently being inefficiently utilized. World demand necessitates a more effective use of this food resource. Marine organisms are also important in yielding products used as resources for medicine and industry. These biotic resources are jeopardized by overharvesting, by use of the ocean as a waste disposal medium and by the development of offshore oil production. The living resources, although not the only resource man uses from the sea, are the most important to man's present and probably future needs. To protect the potential of the oceans to produce biotic resources, it is essential to understand the ocean's physical environment, the ocean biota, and the ecological interrelations of marine organisms. A use of the biotic potential of the sea that is consistent with an understanding of the dimensions of the marine ecosystem is the theme of this concentration of study.

(6) Population Dynamics: Many environmental crises face mankind and threaten his very survival. Problems in hunger, food, malnutrition, pollution, city riots, urban sprawl, etc., may be directly related to our population increase. Stabilization of our population is necessary if environmental problems are to be solved. No technical solution can rescue us from the misery of over-population. The solution is one of education of all mankind to the problem confronting us. Individuals trained in the social, biological, and behavioral sciences would be prepared to work toward solution of this problem.

(7) Environmental Education (proposed): Teacher education in the environmental sciences will be a program coordinated between Huxley College and Western's Department of Education. Programs in elementary and secondary education are being formulated. Students interested in this area are encouraged to inquire for further information.

Students will normally transfer to Huxley as juniors and should have completed most of Western's General Education requirement. Students already attending Western should apply directly to the Huxley College office for application materials. Students transferring from other institutions must first be accepted by Western; application directed to WWSC should be designated "Huxley College" in order to be properly processed.

Olympic College

John M. Stenhjem, Chairman
Health, Physical Education, Recreation and Outdoor Education
Olympic College
Bremerton, Washington 98310

Health, Physical Education, Recreation, and Outdoor Education (Associate in Arts Degree)

The outdoor education program is skill-oriented with courses in mountaineering, skiing, campcraft, and rescue and survival.

Washington State University

Chairman
Program in Environmental Science
Washington State University
Pullman, Washington 99163

Environmental Science (B.S., M.S.)

Environmental science is a multidisciplinary field concerned with the analysis of natural and modified environments and their interactions with biological communities, including the human community. The Program in Environmental Science at Washington State University involves cooperating members from departments in the Colleges of Agriculture, Engineering, and Sciences and Arts.

Through the Program students acquire an extensive background and a broad perspective that prepares them for a variety of roles in the study and management of the environment and its specific resources. Training in depth is obtained within any one of six optional areas: Agricultural Ecology, Biological Science, Cultural Ecology, Environmental Health, Natural Resources, and Physical Science.

University of Washington

Dr. Roger G. Olstad
College of Education
University of Washington
Seattle, Washington 98105

Curriculum and Instruction: Environmental Education (M.Ed.)

The aims of this program reflect the aims of environmental education defined as follows by Dr. William Stapp, a specialist in environmental education at the University of Michigan:

"Environmental Education is aimed at producing a citizenry that is knowledgeable concerning the biophysical environment and its associated problems, aware of how to help solve these problems, and motivated to work toward their solution."

Reflecting the above definition, the following are the specific objectives of our program:

(1) The teacher should become aware of the balance of nature and acquire a body of relevant knowledge–ecological concepts.

(2) Developing appropriate attitudes and behavior should be the ultimate objective of environmental studies–knowledge should become the means to this objective.

(3) The teacher should develop a commitment to educating children to live in a non-destructive way of life.

(4) The teacher should develop skills in implementing investigation-oriented approaches to teaching.

WEST VIRGINIA

WISCONSIN

Northland College

Dean of Admissions
Northland College
Ashland, Wisconsin 54806

Environmental Studies (B.A.)

Our program will begin in the fall of 1971-72. It is broadfield in scope and is designed to give those students wishing to enroll in the program a broad background in all aspects of the environment, social, political, economic, and physical, as well as an emphasis in the biophysical aspect of the environment and the social-political aspects. It is also hoped that in the future the program will be expanded to include an emphasis in recreation.

Our objectives are threefold: (1) To help students understand that man is part of his environment-system and that he can change relationships of the system; (2) To aid the student in understanding the physical environment, both natural and man-made; (3) To aid the student in understanding the problems of the physical environment that man faces and how man might deal with these problems.

We expect graduates to be able to secure positions in many aspects of the environment including various government positions, business positions, teaching positions (with further training) and positions in recreation.

University of Wisconsin

Dr. Milton O. Pella
Professor of Science Education
253 Education Building
The University of Wisconsin
Madison, Wisconsin 53706

Environmental Education (M.S., Ph.D.)

Minor studies in Environmental Education (for majors in other departments of the University)

One means of pursuing graduate studies in Environmental Education at the University of Wisconsin is through the Science Education program in the Department of Curriculum and Instruction. In keeping with the Wisconsin tradition, it is sufficiently flexible that adaption can be made to fit the needs and interests of individual students. Programs at both the masters and doctoral levels are available.

Persons with a baccalaureate degree in the sciences, social studies, or education are eligible for the program providing they meet the requirements for admission to the graduate school. Previous teaching experience is desirable but not required for all areas of specialization. In some cases, it would be possible to acquire teaching experience as a part of the program of studies.

At the masters level the program involves a comprehensive consideration of environmental education with course work in curriculum and instruction and a variety of subject matter areas.

Program flexibility is a strength of the doctoral program at the University of Wisconsin. While all students are expected to achieve expertise as researchers, there are ample opportunities for developing specialties. An individual could prepare himself for work at the elementary, secondary and/or college level. Special competencies can be developed in curriculum, supervision, research and development, and communications. Special programs can also be designed for persons who wish to work in educational capacities in business and industry.

Students with majors in other departments of the University may also pursue minor studies in environmental education.

The doctoral level program will usually consist of a major in environmental education and a minor in environmental resources management. However, the opportunity exists for an individual with background and interest in any scientific discipline to pursue a major in science education and a minor in one discipline with an environmental education slant. The intent is to prepare an individual to acquire sufficient acquaintance with environmental education to become a team member who can represent science education in the interdisciplinary context of environmental education.

University of Wisconsin–Green Bay

Dr. Thomas H. McIntosh
College of Environmental Sciences
University of Wisconsin–Green Bay
Green Bay, Wisconsin 54302

Environmental Sciences (B.S., B.A.)

The College of Environmental Sciences offers programs designed to develop the concept of ecosystems and to provide an understanding of the exchange of materials and energy between living organism and their physical and chemical environment, the use and management of natural resources, and alterations of ecosystems due to air, water, and soil pollution. These programs seek to prepare students to participate in solving the problems of environmental quality and in managing natural resources.

The student takes a core of courses designed to provide a basic knowledge in science which is essential for his basic comprehension of today's world. Concurrent with or following the sequency of core courses, the student, depending on his interests, majors in one of two environmental science concentrations:

(1) Environmental Control

(2) Ecosystems analysis

A student having selected one of the above concentrations may, but is not required to, select any option. The option consists of a course sequency in a discipline in which the student explores in some depth a particular facet of an environmental problem. This is the "concentration-option."

Options especially appropriate include chemistry, mathematics, physics, earth science, economics, anthropology, political science, and biology.

A major in the College of Environmental Sciences may choose a professional collateral. As appropriate, the student may combine a concentration or concentration-option with any of the following professional collaterals: business or public administration, education (elementary or secondary), leisure sciences, mass communication, or social services. The student selecting a combined program of this type is encouraged to adopt his off-campus sophomore or junior experiences to make them relevant to both the concentration and collateral.

University of Wisconsin--Madison

Dr. John W. Thomson
236 Birge Hall
University of Wisconsin--Madison
Madison, Wisconsin 53706

Biological Aspects of Conservation (B.S., B.A.)

This major is designed to provide a knowledge of the importance to man of biological resources; an understanding of some of the relationships of these resources to one another; training in the natural sciences dealing with these resources; and an appreciation of the aesthetic and recreational values and possibilities attached to these resources.

It is designed to train conservation workers such as game wardens, ranger naturalists, and museum workers. It also is recommended for its value as a cultural course. When taken in the School of Education it serves as preparation for teaching in biology and in general science.

University of Wisconsin–Madison

Dean
College of Agricultural and Life Sciences
University of Wisconsin–Madison
Madison, Wisconsin 53706

Conservation Journalism (B.S., Natural Resources)

Conservation (B.S., B.A.)

Natural Resources Option (within other degrees)

Most students who are interested in studying in the area of conservation enroll in one of the specialized majors in the natural resources curriculum. However, individuals who wish to pursue a general broad field of conservation interest may follow this conservation major.

Students preparing for professional positions in conservation work have several choices. Soil conservationists advise or carry out such technical work as planning conservation practices on individual farms and watershed. For this work a major in either agronomy or soils under the agricultural production and technology option can be followed.

Individuals interested primarily in the plant aspects of soil and water conservation should major in agronomy. Those who are interested in the conservation phases of soil management or in soil survey and land classification should major in soils. Those who want to specialize in engineering aspects of conservation work should major in agricultural engineering.

Students who prefer training in biological aspects of conservation and who desire employment as scientific aides, wardens, or farm planning aids should major in agronomy or soils.

University of Wisconsin–Madison

Director
Center for Environmental Communications and Education Studies
602 State Street
Madison, Wisconsin 53706

Environmental Education and Environmental Communications (M.S., M.A.)

Environmental-education-and-communications is not a separate

program here. In other words, you can't get a degree in something called EE & C at Madison. We have a consortium of inter-related programs, each with its own background and degree requirements. We'll explain these inter-related programs in just a moment.

The second thing to appreciate is that the inter-related programs making up EE & C at Madison are professional, oriented to particular career goals. They are not "general studies"–type majors. Put another way, EE & C work at Madison is graduate work carried on under the auspices of professional schools and departments of long standing.

Now, how about the programs making up EE & C? There are three principal doorways or avenues of EE & C work at Madison, each with its own variations:

One route is the environmental education route, administered by the Curriculum and Instruction in the School of Education. This program is built around a course in EE instructional media, materials, and methods, and seminars that cover EE research and developmental strategies. It is closely associated with C & I work in science education, social studies education, recreation education, elementary education, and higher education. It leads primarily to professional work in classroom teaching, curriculum development, program administration, educational research, or environmental interpretation–all with an environmental education bent, of course.

Another EE & C route is the environmental communications route, which aims you in the direction of a journalistic-type career with the mass media, with a resource management agency, with a voluntary organization, or with a resource industry. This program is built around a seminar in conservation information. (Actually there are two environmental communications majors at Madison. One is administered under the Department of Agricultural Journalism, Lloyd Bostian, Chairman; the other under the School of Journalism, Harold Nelson, Director. Each has particular traditions and emphases.)

A third EE & C route is the environmental management route. Under this type of approach you major in a science department like wildlife ecology, in a social studies department like political science, or in a special program like water resources management or recreational resource management– and then minor in environmental education and/or journalism. This type of route points toward a technical position in a resource industry or agency, with a public relations flair.

Wisconsin State University–Stevens Point

James A. Bowles
College of Natural Resources
Wisconsin State University–Stevens Point
Stevens Point, Wisconsin 54481

Resource Management (B.S.), emphasis in Conservation Education

Outdoor Education Minor

Resource Management – The major in resource management prepares students for work in the general field of conservation of natural resources. This major emphasizes a broad approach to conservation and students are trained in the management of all resources and the inter-related problems in such management. Sources of employment for graduates with this major are in urban and regional planning, nature interpretation, park management, and secondary education.

Minor in Outdoor Education – A minor consisting of a core of ten-13 semester hours plus electives from a broad array of courses which allow a student to emphasize a discipline related to outdoor education but different from the students major field of study. A minor used can be used to strengthen a program in biology, natural resources, social sciences, as well as primary and intermediate teaching education majors.

Wisconsin State University–Whitewater

J. Homer Englund, Chairman
H. P. E. & R. for Men
Wisconsin State University–Whitewater
Whitewater, Wisconsin 53190

Elementary Education (B.S.), with a minor in outdoor education, emphasis in environmental studies

The purpose of the Outdoor Education Minor is to enhance the professional preparation of elementary teachers to better qualify them to teach the typical curriculum of the Elementary School with special emphasis in environmental studies.

WYOMING

University of Wyoming

Dr. John H. Schultz
Department of Recreation and Park Administration
University of Wyoming
Laramie, Wyoming 82070

Recreation and Park Administration (B.S,, M.A.) with an option in Outdoor Recreation Resource Management

CANADA

University of Calgary

Dr. J.G. Nelson, Chairman
Committee on Resources and Environmental Planning
University of Calgary
Alberta, Canada

Interdisciplinary (M.A., M.S.) in Resources and Environmental Planning.

The committee is an interdisciplinary group empowered to offer Master's work in the general field of resources, the environment and planning. Areas of special interest are urban studies, public land management and air and water resources, but arrangement can be made for programs in other areas in accordance with the interests of students and of staff members participating in the work of the committee.

Along with the Environmental Sciences Centre at the University, the Committee is a focal point for interdisciplinary studies in the broad area of resources, the environment and planning. The main research theme of the centre is a study of the coniferous forest and associated ecosystems in the Rockies. A number of departments are involved in this work. The Committee on Resources, the Environment and Planning also is co-operating with the Department of Chemical Engineering in its studies of air and water pollution control.

A candidate for graduate work with the Committee of Resources, the Environment and Planning can apply to a department or to the Committee. If the work that the candidate wishes to do can be accommodated in arrangement then normally this is the arrangement that will be made. However, if a student wishes to pursue a program with the Committee this can be arranged after consultation with related departments. The Committee on Resources, the Environment and Planning will then convene an Advisory Committee to direct the student's study and research. This Committee can be composed of members of several departments who are knowledgeable about and interested in the kind of work that the student wishes to do.

University of Calgary

Director
Committee on Resources and Environmental Planning
University of Calgary, Alberta, Canada

Interdisciplinary (M.A., M.S.) in Resources and Environmental Planning

University of Guelph

Professor J. R. Wright
School of Landscape Architecture
University of Guelph
Guelph, Ontario, Canada

Resources Management (B. Sc. in Agriculture)

Resources Development (B. Sc. in Agriculture)

University of Manitoba

Chairman
Department of Environmental Studies
University of Manitoba
Winnipeg, Manitoba, Canada

Environmental Studies

The Department of Environmental Studies attempts to provide a broad base of knowledge and understanding of the inter-relationships of man and his environment. The course is characterized by offering a fundamental design methodology and technique for responding to those needs of society which demand some form of man-made design.

The study program is to provide pre-professional education basic to the succeeding environmental design principles in architecture, landscape architecture, and interior design.

University of Ottawa

Claude Cousineau
Department of Recreology
University of Ottawa
Ottawa 2, Ontario, Canada

Recreology (B. Sc.), with a concentration in Outdoor Education

University of Toronto

Professor J. H. Passmore
Coordinator of Outdoor Education
The College of Education
University of Toronto
370 Bloor Street West
Toronto 181, Ontario, Canada

Outdoor Education (B. Ed.)

University of Toronto

Kirk A. W. Wipper
School of Physical and Health Education
University of Toronto
Toronto, Ontario, Canada

Physical and Health Education (B.P.H.E.), with a minor emphasis in outdoor education

University of Waterloo

Dr. G. R. Francis, Chairman
Department of Man-Environment Studies
Division of Environmental Studies
University of Waterloo
Waterloo, Ontario, Canada

Honours Bachelor of Environmental Studies in Man-Environment (B.E.S.)

The Department of Man-Environment Studies offers a four-year honours program. Its main approach is through issue or problem oriented study of man-environment inter-relationships, supported by related study in the contributory academic disciplines. The objectives of this program can be seen from four points of view: that of the student, that of the Division of Environmental Studies, that of the University community, and that of society in general.

For a student, the program provides one means to obtain a broad-based educational experience which at the same time answers to a degree the growing demand for contemporary "relevance" in the approach and content of higher education. It is not intended for those who desire a program with sufficient technical input to satisfy some professional qualification at the undergraduate level; however, it can provide one base from which professional qualifications could be sought through graduate study.

For the Division of Environmental Studies, the man-environment program can provide some of the input into the pre-professional training of planners and architects as well as useful perspectives for those who will ultimately enter careers in fields such as teaching, administration, and overseas development work. The Department is also in a favorable position to keep in touch with developments in a wider range of academic subjects so that professional program students are constantly encouraged to form their ideas, attitudes, and goals in the wider context of man and his environment.

By making some of its elective courses available to students based elsewhere in the university, the Department gives encouragement to the development of an environment-oriented outlook among students whose primary interest otherwise lies in some one particular discipline or profession. The Department can also play a useful function in providing an interdisciplinary focus whereby on-going research in a number of departments in several faculties of the university could be related in a problem-oriented manner.

From the point of view of society in general, the program offers an educational opportunity which many of today's students find more challenging than some traditional alternatives. The program being developed is one which encourages students to acquire an intellectual acumen that is not artificially constrained by academic disciplinary boundaries, to obtain a considerable degree of understanding of complex environmental problems, and to develop some of the technical and other pre-requisite skills which are related to their solution. To the extent the program succeeds in doing this, it would provide for society a type of well-educated person who in due course could usefully contribute to the policy-making function in the public service or in the private sector, or serve particularly well the role of advocate, critic, or initiator in the continuous process of social change and adjustment.

University of Waterloo

L. O. Gertler, Director
School of Urban and Regional Planning
Division of Environmental Studies
University of Waterloo
Waterloo, Ontario, Canada

Honours Bachelor of Environmental Studies in Urban and Regional Planning

Regional Planning and Resource Development (M.A., Ph.D.)

The Honours B.E.S. Urban and Regional Planning is offered by the School of Urban and Regional Planning, Division of Environmental Studies.

The broad educational aim of the program is both to impart an understanding of the planning process and to prepare the student for being an active participant in that process. The program gives attention to the major planning challenges in Canadian society, such as the development of frontier regions; the rise of megalopolitan patterns in Central Canada; the conservation of limited, vital and highly productive natural resources south of the Canadian Shield; the technological impact

on unique regional conditions, whether of climate, terrain or culture; and the outdoor recreation explosion.

The program gives a well-rounded preparation for a wide variety of professional or graduate work in urban planning, regional planning and resource development. The student is also given an opportunity to pursue a special interest in economic or social issues in planning, or the planning applications of quantitative methods. This is done through the selection of elective courses. Students are also encouraged to select Senior Honours Essay Topics from these special fields of interest.

The School has faculty with academic and practicing experience in urban and regional planning, urban design, the governmental process of planning, regional economic development, conservation, resource inventory and development, regional science, sociology and ecology. Specialists in other departments offer a range of other courses including the philosophy of urbanism, urban geography, resource economics and transportation engineering.

Considerable emphasis is placed on confronting the student with a variety of field experiences. Students will be expected to defray some part of the cost of field trips.

The integration of planning experience into the program is considered an important part of the education process. Students are encouraged to gain experience during the summer vacation period. The School endeavors to help students find suitable work, particularly between their second and third, and third and fourth years. It provides the maturing prospective planner with an opportunity for a better understanding of the discipline and allows for an early appreciation of personal compatibility, aptitude and natural inclination. It is hoped that through the work of the Professional Liaison Officer the student will be brought into direct contact with the profession and will be exposed to problems typical of those encountered in practice, as well as being introduced to projects and operations far beyond the scope of any university laboratory or classroom. In seeking assistance for finding meaningful planning experience, students will be asked to give permission for the release of their marks to employers.

The program is recognized by the Town Planning Institute of Canada and will qualify graduating students for obtaining employment with a planning agency or with consulting or other agencies working in the planning field, or to do Graduate work in Planning.

The program in Regional Planning and Resource Development is aimed at filling the crucial need for competent personnel who can carry out research and implement action programs in the fields of regional planning and resource development.

Within the program a student may concentrate on the planning and development of a specific kind of region: urban centered, broad economic, or frontier. The student may also emphasize either urban development or resource development, but in the context of the region.

The Master's program is open to graduates with a four-year Honours degree (or equivalent) in Planning, or in a number of other fields providing relevant background to planning studies: Geography, Economics, Sociology, Political Science, Architecture, Civil Engineering, Biology, Geology, Forestry, Law, or other resource disciplines and social sciences.

The Master's candidate is required to complete successfully a minimum of three graduate courses in Planning (one of which is mandatory) and a thesis. The candidate will be assigned an Advisor at the start of his program of studies. His detailed program will be worked out with his Advisor and Committee. The Advisor and Committee may determine the total number of courses required and the mix of courses; and may substitute one course from another discipline for one of the three required courses. The Master's program will normally require two academic years. Graduates with good standing from the undergraduate Planning program, Bachelor of Environmental Studies (B.E.S.) Honours, Urban and Regional Planning, from the University of Waterloo (or a comparable program) may be permitted to complete their program in one academic year.

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